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Papers Presented to Congress

No. 8.—THE RELATIONSHIP OF POULTRY DISEASES TO THE PRACTITIONER*

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Primarily I think it is admitted on all sides that the problem of poultry diseases has been greatly neglected by the practitioner, in this country.

Looking into the question, it appears to be difficult to understand why this state of affairs should exist. It is obvious, of course, that years ago poultry diseases were not included in the curriculum of our training centres, but in those days poultry keeping on a commercial scale had not yet arrived in this country. Now the training is given at our colleges to help our younger professional brothers to cope with the questions of disease in poultry.

To say that many had no training in this work at college is by no means an excuse, because whilst at college we were taught pathology and bacteriology and the prevention and cure of disease. Once this knowledge has been acquired it matters little whether the patient is a bird or a beast.

Further, one finds in perusing the records of these National meetings during the past eight years, that two very full and able papers have been presented; I refer to the papers by Rice, in 1926, and Taylor in 1931, both very valuable contributions and concise accounts for the benefit of veterinarians.

I suppose, looking back, much the same state of affairs must have been present when dogs and cats entered our field to a very much larger extent than heretofore. For a time when these changes occur there appears to be an apathy or possibly a reluctance—not knowing as much about the conditions of the new field as was known of the old. The two changes to new fields cannot be strictly compared, because with dogs and cats there is a marked sentimental value to be taken into consideration and the fact that it is not customary to find these animals in large units.

It is well known to all what vast strides have been made by the poultry industry and how large is the amount of money that is now invested in this branch of agriculture. We have witnessed the passing of the barn-door fowl and the arrival of the mammoth incubators, hovers and brooders. Few persons enter upon a general agricultural career without previous training and experience, but large numbers of our countrymen have taken up poultry keeping, many on a large scale, without any previous knowledge of livestock. Therein lies one of the great problems of the industry; many owners have no knowledge of the requirements of a bird in health and are hopelessly handicapped when disease occurs.

One might with advantage trace the existence of many poultry farms. A person is out of work or requires an open-air life, a small capital is available, and a few years ago the prospects appeared to be favourable. A small portion of ground is obtained, with housing accommodation, and a few birds purchased. Probably all this has been done without consulting anyone who may be in a position to give him sound and helpful advice. In the first season chickens are either reared or purchased as " day olds " and probably, when the person has been in business one year, he finds he has been quite successful financially and increased the number of his stock three or four times by the aid of his chickens. These chickens have done well and come to the laying season without the necessary increase in acreage or housing accommodation, possibly due to shortage of capital. Such progress may continue, but for a very limited period. The ground which was used by five hundred birds now carries 2,000 or more. The land becomes fowl sick, diseases introduced with the first-purchased adult stock become more prevalent and soon an epidemic will devastate the stock. The owner, having little knowledge of livestock, probably sees few of the early symptoms and indications that something is radically wrong. He has probably read much in the popular poultry press and books on poultry keeping and, finding birds dead, attempts to deal with the problem by means of patent medicines, etc. Such unfortunate owners are usually driven out of the industry by financial losses due to outbreaks of disease. It is well known that it is the disease problems which prevent many owners making a successful career of poultry farming.

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Let us examine the fundamental laws that have been broken by these unfortunate beginners.

Before taking a piece of land it is very advisable to have some competent authority to give his opinion regarding the suitability of the site and the land for poultry keeping. The most suitable land must be well drained, level or with a gentle slope to the south-east, a good medium loam, not clay, but not so light that pasture is easily burnt off in summer. The pasture should consist of good permanent fine grasses, and should not have been used during recent years for poultry.

With the purchase of adult stock there is always the danger of introducing diseases, bacterial or parasitic. It is much the wiser plan to purchase eggs or day-old chicks and build up the flock in this manner.

Advice can readily be obtained from competent persons regarding the type of houses most suited to one's needs, the extent of housing required and the breeds which give the best results under the conditions contemplated. Such advice is very valuable and often in the first place prevents excessive capital being expended in housing accommodation.

The arrangement of the ground should be such that a certain area is given over exclusively as a rearing ground and on no account should this be used for adult stock. In this original planning a small area is required for an isolation pen, where adult birds can be quarantined on arrival as newly-purchased stock or when returned from shows and trials.

Finally, the new poultry farmer requires advice regarding the number and breed of birds his ground will safely carry, taking into account the system of housing, etc., to be employed, and a severe warning that overcrowding can only end in disaster.

All this advice should be given by one who knows livestock in health and disease, and understands their requirements in foodstuffs, and hygienic accommodation and surroundings; there is no question that the veterinarian is the only person who is qualified to give this advice.

The poultry industry in this country continues to make rapid strides. The census of poultry taken in June, 1932, indicated that adult fowls and ducks had increased over the previous year in England and Wales by 2,158,000, or 8·8 per cent., young fowls and ducks by 3,147,000, or 10·2 per cent. Adult fowls and ducks were greater in 1932 over 1930 by 4,314,000, or 19·8 per cent., and in young fowls and ducks the increase over 1930 was 5,775,000, or 20·6 per cent. Thus in two years these birds had increased in number by one-fifth. The increase of adult fowls and ducks in Great Britain and Northern Ireland from 1930 to 1932 was 5,322,000, or 19·2 per cent. It requires to be remembered that a very large percentage of this stock is owned by the general farmer and thus in close contact with the veterinarian on his daily rounds.

The average individual fowl is of relatively small value, but when birds are housed in large units, an outbreak of disease can be a ruinously expensive affair. In the diseases of poultry, as with the animals usually found on the farm, it is in prevention that the services of the veterinary surgeon can become so valuable and esteemed.

NOTES FROM THE DIARY OF A VETERINARY SURGEON WHO IS INTERESTED IN POULTRY DISEASES

Leaving the surgery in the morning on my round of calls, my first visit was to an old client, to examine a beast. During the conversation with the farmer I was informed he was experiencing a heavy death rate in young chickens. He installed last year a battery brooder in a wooden hut and fitted an anthracite stove as the heating appliance. Walking across the yard, I found a new, well-built wooden house, with plenty of window space. Entering, I at once noted a hot, dry, stuffy vitiated atmosphere, with a thermometer reading over 70° F. instead of 60° to 65° F., and found curtains made of bagging hung over the doorway and many of the windows and all the ventilators closed with bagging. No living creature can be properly reared in such an atmosphere. Further examination showed that the heating apparatus, using coal as fuel, was placed within three feet of the battery brooder, and the flue pipes extending to the ceiling of the hut, with several joints made by metal collars placed around the pipes with no packing material in the joints, permitting the escape of gases into the room. All these points require correction; fresh air is essential by means of adequate non-draughty ventilation, the stove should not be placed in close proximity to the brooder, and the flue pipe should pass out of the hut at a low level and joints packed and made thoroughly gas-proof. On the other hand, the atmosphere may be too cold, and obviously more heat is required, but it is necessary to stress that hot air need not necessarily be impure air. Feeding stuffs are now often mixed by the poultry food manufacturers and usually they are of good quality and suitable, but they should be examined to ascertain that they are fresh and wholesome. Musty foods must on no account be used.

The owner had not sent away any of the dead chicks for examination. This should be done for bacteriological examination to be carried out. The busy practitioner usually has not the time at his disposal to carry out this examination. If he carries out a *post-mortem* examination he may find an almost total absence of foodstuffs

in the intestinal tract of the chickens. This is frequently seen in young birds that are housed under unsuitable temperature conditions, either too hot or too cold, or a condition of diarrhœa may be evident. Fluctuations of temperature quickly disturb the digestive system and cause diarrhœa in the young chickens. A negative bacteriological report from the laboratory will usually indicate the absence of any contagious disease. The temperature and ventilation of the hut having been corrected and the necessary attention given to flue pipes, no further losses were experienced.

Visiting my next client, I was informed that the young birds had been out in night arks about five days and now they were noticed to be mopy, standing about, sneezing, and the nostrils were occluded with a gummy substance. The night ark is usually fitted with a slatted floor, and in this instance it had been placed on badly-drained ground; pools of water were about, and a large number of young stock huddled together around the house. Examining the affected birds, one found the gummy material over the nostrils was easily removed, and when pressure was applied to the upper portion of the nostril a clear to pale-yellow, thin fluid exuded. Careful examination of the mouth parts, comb and body of the birds established the absence of any sign of pox lesions. With the history of the case, absence of fowl pox in other groups of birds on the farm, it was fairly safe to diagnose roup as the condition found in these sick birds. The birds had been brought from dry, warm quarters and too suddenly placed in a possibly draughty night ark situated on damp ground, and this outbreak was the result. The severely affected birds should be killed and the remainder kept in strict isolation. Slightly affected birds may have the gummy material removed from the nostrils and antiseptic treatment applied locally. The birds should be accommodated in non-draughty houses on well-drained land. These measures should have the effect of bringing the stock back to a healthy condition.

After examining a horse at another farm I was told by the farmer that he had had very bad luck with his young turkeys this season. Towards the end of the hatching season for chickens there was a fairly heavy death rate, but the earlier hatches were excellent. Probably the weather was incriminated as the cause of this loss, but the loss of the poults was really serious as the profit from these birds is distinctly good. He had used an incubator for hatching the hen eggs and at the time the losses in the chickens occurred he had a large number of turkey eggs in one tray of the incubator along with some hen eggs. These were all due to hatch out about the same time. There was not a large death rate in the chickens, but quite serious losses were sustained in the poults, and these represent much more money than the chickens.

The bacteriological examination of some of the dead chickens would have revealed *B. pullorum* as the cause of death. Knowing that turkeys are susceptible to this organism, it is not surprising, when one reads the report of the bacteriologist, to find that this organism was also the cause of death of the young poults. Turkey eggs should not be placed in incubators containing hen eggs, owing to the susceptibility of both to infection with *B. pullorum*. Contact between chicks in the incubator for a very short period is sufficient to infect many from an original focus. Blood testing all stock is the best method of creating a bacillary white diarrhœa-free flock from which healthy stock can be reared.

The next visit is to a poultry farm, the owner of which has been a client of mine for a few years. Besides 5,000-6,000 head of poultry he keeps a few cows and two or three good hunters. He has had trouble with one of his mounts, which has been out at grass now a considerable time. After walking with the owner to see the mare, and finding she is making good progress, conversation turns to the poultry side of the farm. The owner is much worried about a steadily increasing death rate in his older birds.

About two years ago we had had a chat about poultry, which mostly concerned the large increase in the number of poultry farms in the district and what the financial prospects were likely to be. Disease questions were mentioned, but I said I had not studied poultry diseases seriously and therefore did not consider I could be of great help to him.

That sentence prevented the farmer bringing his poultry problems to me for a period of two years. The trouble now was an unexplainedly high death rate and loss in condition of the older birds. Walking over to the poultry farm, the young stock all appeared to be in excellent condition, the ground rather bare, but the farm generally well managed, with one vital exception—everywhere the houses were accommodating too large a quantity of stock. Overcrowding is one of the most deadly sins of the poultry industry and found in all parts of the country. Arriving at the pens housing the two- and three-year-old stock, one noticed some were crowded in groups inside the house and many outside sheltering near the building. Some were standing on one leg, the feathers dull and unkempt, the comb and wattles small and white to grey in colour. A number of the birds were rounded up and, on handling, found to be in varying stages of thinness. Three of the thinnest birds were killed and a *post-mortem* examination made. An identical condition was revealed in each bird: liver enlarged and studded throughout the surface and substance with small white nodules, varying in size from a mere speck to

nearly one quarter-of-an-inch in diameter. The spleen was enlarged and showed many large lesions, changing the contour from one smoothly rounded to one with irregular protuberances. In two birds nodules were found on the serous surface of the intestines which, when incised, showed a whitish-yellow caseous content. I explained to the owner my suspicion, but that I would require to make a bacteriological examination from the lesions on my return to the surgery. On the 'phone in the evening the owner was informed that the problem he was up against was that of tuberculosis. It was, therefore, decided that all the stock on the premises should be tuberculin tested. Rings were to be fitted to the birds and the test to be carried out next week. With a small spirit lamp steriliser, hypodermic syringes, needles and tuberculin packed in the car, I set out for the farm. About 150 birds per hour were tested with tuberculin, and any emaciated birds passed up for testing were culled as unlikely to react to the tuberculin test. These were killed and *post-mortem* examination revealed gross lesions of tuberculosis. All these birds were sent to the incinerator, the best method of dealing with this gross infection. Forty-eight hours after the tuberculin test was made, the reactions were recorded.

The final results clearly showed the slow insidious type of the disease. In the pullets, less than 1 per cent. gave a positive reaction, whereas in the 18-months- to two-year-old birds 15 per cent. reacted, and in the two-and-a-half to three-year-old birds 22 per cent. gave a positive reaction. All reactors were rigorously culled and removed immediately from the flock. This removal of infected stock helped considerably in reducing the former overcrowded condition. Some new houses were placed on land which had not been used previously for poultry, and to these the young birds were transferred. The vacated houses were thoroughly disinfected, scraped and cleansed and left exposed to the action of the sun and atmosphere. The soil adjoining the houses was dug up and removed away from any possible access by poultry or other animals and the remainder of the runs treated with two tons of fresh-ground quicklime and ploughed in. The runs should be given, where possible, a rest for twelve months. The houses and runs used for the older birds were vacated for a time and subjected to a thorough disinfection and cleansing, the soil around the huts being removed as from the other runs, and replaced by cinders to the depth of about nine inches. It is obvious that the gross contamination of the runs is around the houses, because it is here the birds stand about, and the organisms passed in the droppings contaminate the land. The remainder of the run was limed, ploughed, and to remain unoccupied for twelve months. The poultry farmer annually purchases a large number of high-priced stock birds; these are now to be bought subject to passing the tuberculin test, to prevent the introduction of more infection by this route.

It is arranged that all birds that die shall be sent to me for *post-mortem* examination in order that a record of the cause of death may be kept. Also all the stock will be tuberculin tested again in six months' time and subsequently once per annum. By means of these methods it is hoped to clear this heavily infected flock of this insidious and dangerous disease.

Returning for lunch, I found a telephone message, stating that a poultry farmer would call at 2 o'clock with some chickens for examination. The farmer has had quite good hatches and the chickens doing well until about three days ago, when they were a month old. Each morning for the last three days there have been many deaths, and the majority of the chickens look unwell, huddle together, their feathers ruffled, wings drooping, droppings thin and blood-tinged. The six chickens for examination are representative of the sick birds. The history of the trouble is well illustrated in their appearance. A *post-mortem* examination was carried out, and in each case with identical findings. The cæca were enlarged, full, tense and dark-coloured. When the cæca were opened the contents appeared as a clot of blood, with much damage to the mucous membrane. A smear prepared from the blood clot and examined under the microscope disclosed large numbers of öocysts, which permitted the diagnosis of coccidiosis to be made. There is not as yet any substance known which appears to have a preventative or curative action against coccidiosis. Whilst this is unfortunately the case, there is much one can do for some poultry farmers, and it is most desirable to see their birds and the premises. It was therefore arranged that a visit should be paid to the poultry farm. The farm was found to be situated on low-lying ground, heavy clay land, with much water standing about, and long coarse grass. The houses were mostly of the type permanently fixed in one position; the ground around them was quite bare, large dust-bath holes filled with water, in all directions. Inside the houses there was much evidence of similar neglect: dropping boards covered thickly with fæces and the litter on the floor very old, dusty and dirty. The young birds were not ranged separately but could pass freely through several runs used by the adult stock. I explained that a separate piece of ground should be exclusively devoted to the young stock as a rearing ground, and any stock escaping from this area should not be allowed to return. When the birds are three months old they should be moved to other ground, and at the end of the season the rearing ground should be cleaned, well limed and kept

free from birds until next year. The houses must be kept thoroughly clean, droppings removed from the boards daily, without exception, and litter changed when it becomes dirty. Around the houses the bare ground should be dug up to a depth of six to nine inches and the soil removed, away from contact with birds, and cinders laid down around the hut. Dust-bath holes are to be filled, the land drained and the grass cut or cropped with sheep, and all rank weeds removed. Obviously all the young birds which show symptoms of coccidiosis should be removed from the flock and destroyed. The culling of these birds should be carried out in a vigorous manner, because few birds that have been affected with coccidiosis make up into good, healthy, normal stock. The houses occupied by the young stock require disinfecting, scraping, and all litter and refuse to be burnt. It is essential when dealing with these disease problems to ensure that infection is not carried from one pen to another by means of the attendant, his boots and clothes, or by implements and utensils.

During my round this morning, when coming through a village, I was handed a message from a client at the Manor Farm. Turning along to the old place I found the farmer was wanting help with regard to his turkeys. He told me it was noticed a few days ago that the turkey stock were standing about a great deal and apparently not very keen for food. This morning, when giving them their feed, he noticed three could not completely close their mouths, and closer examination revealed cheesy material on the tongue and in the mouth generally. On examination I found all the birds had lesions on the less feathered parts of the head. These lesions showed as firm, rough, wart-like growths, varying in colour from yellow to brown. The lesions in the mouth, on the mucous membrane of the tongue and mouth parts generally, showed as masses of tough cheesy material. With a scalpel, this deposit could be removed from the mucous membrane, revealing a red, raw surface. I was informed that the turkeys for two months had not been allowed range with the poultry and that the latter all appeared to be healthy. Three weeks ago five young turkeys had been bought in the local market and brought home and placed with the home-reared birds. To-day these five birds were all found to have lesions on the head, and during the first few days after their arrival on the farm it had been remarked that very frequent fights had taken place. The treatment of fowl pox is not found to be economically or scientifically sound; a large amount of attention requires to be given to the affected birds, dressing the lesions and strict isolation enforced, otherwise the disease will spread to the remaining susceptible birds. Twenty-two birds were found to have lesions on the head or in the mouth, and as these well-grown birds represented a large amount of money to the farmer he wished to try treatment and was willing to ensure the isolation of the affected birds and the removal of the healthy stock to clean ground. Six of the most severely affected were killed; it was decided to dress the affected parts of the remainder, removing the deposit on the mucous membrane of the tongue and mouth parts and the warty growths on the head, burning all this removed material. Repeated cleansing of the parts and dressings are essential. The healthy turkeys were vaccinated with fowl pox vaccine and kept in isolation for three weeks and then moved on to clean ground. All the poultry stock on the farm were also vaccinated. Some weeks later I was informed that there had been no extension of the disease and now all the stock were healthy and doing well.

A message was received that one of my clients was having serious losses amongst geese, and could a visit be arranged at the earliest? Arriving at his farm, I found that he had received delivery of 400 geese from the Continent. When delivered by the railway company, 25 were found dead in the crates and many obviously sick. The farmer, in previous years, had purchased geese from the same source in September or October to prepare for the Christmas trade. The geese had been housed in a covered yard, and on my arrival the total dead numbered 42. Many sick birds were found in the flock, showing a yellow discharge on the feathers around the vent, and a greenish, brown or red diarrhœa. Two hundred and twenty birds which appeared to be normal were removed to another shed and all the sick birds were killed. *Post-mortem* examination revealed very constant findings. A reddening of the skin of the abdomen and breast was conspicuous and a general congestion of the blood vessels of the visceral organs. In many the heart showed punctiform hæmorrhages and deep-seated hæmorrhages of the intestine, particularly in the duodenal areas, many of these being evident from the peritoneal surface.

The microscopic examination of stained blood smears from the heart and elsewhere revealed large numbers of bipolar organisms. With these findings the diagnosis of fowl cholera was made, to be subsequently confirmed at the laboratory by animal inoculation. The introduction of adult birds is always attended by the risk of bringing disease on to the premises, and particularly so when the birds are imported from abroad. Isolation of such birds is essential, and the only reliable method of preventing disease occurring in the home stock. Fortunately my client had carried out this measure, and thus prevented the disease passing to his own stock of 600 geese. All the carcasses were destroyed

by fire and a close watch kept for any symptoms of disease in the remaining imported stock, the farmer himself tending these birds, ensuring cleanliness and disinfection of the shed, drinking vessels, etc. Only five birds later showed any symptoms of cholera and these were promptly killed, the remainder making up into fine birds.

About three weeks later I met the same farmer in the market and we were talking over his trouble with the imported geese. He said he would like me to call to see 20 geese he had at another small farm. These were not home-hatched, but had been purchased from a small-holder near by, and he considered they had never really done well, and when seeing them the previous day (the first time for about a month) he noticed how weak they appeared. He found from his man that they had been losing condition during the past week or so. I was near the farm during the following day and called and examined the birds. They were very debilitated and in poor condition. The smallest bird was very poor, and I decided that this bird should be killed and *post-mortem* examination made. The heart, lungs, liver and kidneys appeared to be quite normal to naked-eye appearance, but the intestine was very thin, the contents being of a slimy mucous type. Examining the lining membrane of the gizzard after removal of the grit and other contents, I noticed brown crusty patches and amid these lesions fine white threads could be seen. Plunging the organ into a bowl of clean water I could see a mass of hundreds of waving threads, resembling fine white cotton thread, floating in the water. Removing the gizzard from the water and teasing the crusty patches, the thread-like pieces came away. Examination showed them to be *Amidostomum anserus*, the gizzard worm of geese, about half-an-inch long, their heads buried in the wall of the gizzard and the tail protruding into the lumen of the organ. The life history of this parasite is not completely known, but is considered to be similar to that of the large round worm and the cæcum worm, except that the eggs hatch on the ground and the minute young worms are taken up with the food and bring about infection.

It was decided to treat the remaining birds of the group with carbon tetrachloride, one 3 c.c. capsule being given to each bird. This dose proved to be very suitable for the birds in question, though when birds are to be treated it is often wise to try a dose varying from 2, 3 or 4 c.c., depending upon the weight of the bird. Wet land should be avoided, as it is under such conditions that the worst outbreaks occur. Goslings should be kept completely apart from old birds, which may be infested with the parasite.

I am frequently consulted regarding the condition in poultry known as gapes, the tracheal infestation with *Syngamus trachea*.

The symptoms occur when the birds are about 14 days old, and are rarely seen in birds over four weeks of age. A curious cough or sneeze with a shaking of the head is noticed; later the birds stretch the neck forward with the beak open, trying to take in more air. In the advanced condition the feathers become ruffled, the wings droop, the eyes are often half closed and give a general appearance of dejection. Death usually follows, due to suffocation. Many of the eggs passed by the worms are coughed up into the mouth of the birds, swallowed, and reach the ground with the droppings. After a period on the ground a minute worm develops within the egg, but a minimum period of niue days is necessary before it can infect another chicken. While lying on the ground the eggs may be swallowed by earthworms without suffering loss of vitality, and thus chickens may be infected by eating earthworms containing ripe eggs. The young parasites eaten by chickens pass through the bowel wall and are carried in the blood stream to the lungs. Nine days from the ripe eggs being swallowed the young worms reach the trachea and in eight to eleven days the females begin to lay eggs. The life cycle can be completed in 26 days.

Adult fowls rarely harbour the parasites and are difficult to infect artificially, whereas adult turkeys under natural conditions frequently harbour the parasites and show no symptoms. These birds may therefore act as hosts and carry the disease from one breeding season to the next.

To control this infestation one recommends that turkeys and chickens must not be kept together and that chickens should not be reared on ground where an outbreak has occurred the previous season, as the gapeworm eggs can survive through the winter. Finally, the intensive rearing of chickens up to six or seven weeks old in houses where droppings are removed frequently and regularly, completely controls the parasite.

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By means of these notes from a fictitious diary I hope the interest of the general practitioner will be stimulated in the poultry industry, the housing, hygiene and feeding of poultry, and the diseases to which they are susceptible, their prevention and cure.

I contend that a large field is open whereby the practitioner may show his indisputable value to the poultry industry and at the same time provide himself with an absorbing study, of material interest to him.

Discussion

The final session of the Veterinary Medicine and Surgery Section of Congress was devoted to the consideration of the foregoing paper, on

the morning of Friday, September 22nd, when there was a moderate attendance at the Town Hall, Llandudno, with the President of the Section (Captain R. L. Lewis, M.R.C.V.S., D.V.H.) in the chair.

The Chairman, at the outset, announced that Captain Dobson had written expressing his regret that, owing to unforeseen circumstances, he was unable to be present. Captain Doyle had kindly consented to reply to the discussion, which he would call upon Mr. Marginson to open.

Mr. G. C. Marginson, M.R.C.V.S., D.V.S.M. (Vict.), in opening the discussion, said:—

I feel sure that you will all desire to join me in congratulating Mr. Dobson on his excellent paper.

I am very pleased to have the opportunity of expressing some of my views on the subject before us—"The Relationship of Poultry Diseases to the Practitioner."

As a veterinary surgeon who has combined the study of poultry diseases with general practice, I can speak from actual experience, although there are undoubtedly many other veterinary surgeons, not necessarily practitioners, who are more qualified than I am to open this discussion.

The greater portion of Mr. Dobson's paper deals with extracts from a fictitious diary. The diary could not have been more imaginative, for a practitioner might never encounter some of the diseases to which Mr. Dobson has referred, *e.g.*, my experience has been that both fowl-pox and *B. pullorum* infections in turkeys, and fowl cholera in geese are only very occasionally met with; but I realise that Mr. Dobson has purposely included these in order to indicate the wide field available for investigation. Some of the more common conditions which Mr. Dobson does not include are fowl typhoid, fowl paralysis, blackhead, rickets, gout, Aspergillosis and intestinal worms. These, together with bacillary white diarrhœa, coccidiosis, tuberculosis, and fowl-pox, constitute, in my opinion, over 90 per cent. of poultry pathology.

Mr. Dobson, in mentioning the training of veterinary surgeons, states that we are taught pathology and bacteriology, and the prevention and cure of disease, and that once this knowledge is acquired, it matters little whether the patient is a bird or a beast. With these remarks I entirely agree, but the fact that we were taught pathology and bacteriology does not necessarily make us pathologists and bacteriologists.

In order to make poultry disease investigations a paying proposition, one must have a suitable laboratory of one's own, and possess a thorough practical knowledge of laboratory technique. If one has only a theoretical knowledge, and is thereby compelled to send material away for examination, then it is not a paying proposition, since there is always a recognised standard charge for such examinations, and any poultry farmer can have the work undertaken, even at our own colleges, at the same rate as the veterinary surgeon.

Mr. Dobson, in his diary, mentions a number of visits made, during which he was called into consultation respecting poultry diseases. During the course of my daily visits, my advice is often sought on poultry matters, and I find that a great amount of time is spent for which I receive practically nothing in the way of remuneration. One can charge very little for advice, since the various county councils employ Poultry Advisers, whose services are free. These Poultry Advisers are usually well-informed, as the result of articles written by members of our own and other professions to the lay press. In addition to giving free advice, they carry out tuberculin tests, inoculate birds against fowl-pox, etc., perform intravenous injections for blackhead, at a charge which covers the cost of the material only. They also take blood samples free of charge.

Mr. Dobson cites a case where 150 birds were tuberculin tested in one hour and re-tested again in six months' time. This entails two hours' work to complete each test. The cost of tuberculin at the rate of 1d. per dose will be 12s. 6d. on each occasion, and assuming that the veterinary surgeon makes a nominal charge of one guinea per visit, the total cost would be £5 9s. Year-old birds, even when healthy, are only valued in the neighbourhood of 2s. 6d. each, and the value of the 150 birds is therefore less than £20. The cost of the test, reasonable though it may appear at first sight, is approximately 30 per cent. of the value of the birds, which is prohibitive. The Poultry Adviser, on the other hand, would test these birds for 25s., which is the bare cost of the tuberculin.

The only treatments available for poultry diseases, which are of any value, are, with few exceptions, sera and vaccines. Unfortunately for the veterinary surgeon, these (like cattle vaccines) are advertised as "supplied to the veterinary profession only," yet they can be obtained *ad lib.* by any member of the general public. Even the Ministry supply fowl-pox vaccine direct to poultry farmers at exactly the same rate as they supply to veterinary surgeons.

So far, my remarks will not have encouraged any one of you to develop the poultry side of practice as a remunerative proposition. Mr. Dobson concludes: "There is, without doubt, a large field open to the practitioner whereby he may show his undisputable value to the poultry industry, and at the same time provide himself with an absorbing study of material interest." This "absorbing study" entails a great amount of work, and calls for adequate remuneration. The average practitioner has not the time to devote to it unless he is prepared, as in my own

case, to do his general practice during the daytime, and his poultry work at night.

Personally, I supplement my income to an appreciable extent by conducting agglutination tests for bacillary white diarrhœa, and carrying out bacteriological and *post-mortem* examinations both for private individuals and for poultry food manufacturers. These are, at present, the only parts of poultry work which I can recommend as paying propositions, but I find that a knowledge of poultry matters is certainly a great asset to a veterinary surgeon in developing the other side of his practice.

If the supply of vaccines were entirely in the hands of veterinary surgeons, as it undoubtedly ought to be, I should have no hesitation whatever in recommending every practitioner to take up the subject of poultry diseases.

Dr. G. B. Brook (Derby) thought that the paper was one of the most important at the Congress. It dealt with problems which required careful examination both from the point of view of the poultry keeper and that of the veterinary worker. He shared the feeling that Mr. Dobson had missed a page out of the diary, in omitting to mention such incidents as Mr. Marginson cited. Instancing an outbreak of disease diagnosed as fowl-pox in which, after a consultation, it was considered necessary as a precautionary measure to vaccinate something like 2,000 birds, Dr. Brook said that during the interval between the consultation and the arrival of the vaccines the client came to say that no further action in the matter would be necessary, as the county poultry instructor had done the whole thing for nothing, or, at least, for the cost of the vaccines. He was not criticising the policy of the poultry instructor movement. That question would be for the committee, if they agreed to set up one, or for the discussion movement which he had hoped might result from that meeting. Dr. Crowther, Principal of the Harper Adams College, might tell them how the poultry instructors came into being and what were their official duties.

Proceeding, Dr. Brook said he had an unstinted admiration for the general work of these county officials and their complete knowledge of poultry husbandry, which was a special line. But he did think something should be done about their position in regard to diagnosis and treatment of disease. He mentioned his co-operation in Derbyshire, in this matter of poultry diseases, with the county poultry instructor. They had, he said, come to an amicable arrangement for the mutual investigation of outbreaks of disease. That represented, at any rate, a tendency towards the ideal.

With regard to laboratory work, might he remind Mr. Marginson that the Cambridge Institute of Pathology carried out examinations *gratis*? The question for practitioners was as to whether a system of poultry treatment was going to be both economic and efficient. Poultry-keepers would only seek the services of the county instructor if the service of the practitioner was incomplete or economically inaccessible. Did they agree that the bulk of the work was not an economic proposition in the hands of the practitioner? And if they agreed that in the majority of instances it was impracticable to do the work, what scheme would they put forward? He thought that in each county there should be a part-time poultry practitioner specialist, upon whose services the county poultry instructor could call at any time, the county council concerned paying the veterinary fees. Such a veterinarian would have to attend a post-graduate course not only at a veterinary college but at an agricultural college. An alternative scheme would be the appointment of, say, veterinary advisory officers, each of whom could control the poultry instructors of two or three counties, supervise their work and conduct laboratory tests. If the profession did not make some definite move they would find the county poultry instructor the sole worker in the field of poultry disease, nor could they blame him for treating disease if, when he turned to them, he found no help forthcoming. He hoped there would emanate from that meeting the suggestion that a consultative committee representing practitioners, county officers and laboratory workers be formed to take evidence from representatives of agricultural colleges, institutes and poultry associations, with a view to a thorough investigation of the question and the arrival at some satisfactory conclusion.

Mr. W. A. Pool (Weybridge) said that one of the first things which was noticeable about this question of poultry diseases was the neglect of the subject by practitioners. The attendance at the meeting was an example of that neglect. There was, however, an onus on the profession to take care of livestock; if they did not take that responsibility, then they could not have very much grievance if others stepped in and did the work for them. He thought there should be a value in the practitioner being the sole authority in an area in the matter of livestock disease. So regarded, the veterinary surgeon would find that the public would automatically come to him for everything in that connection and such an attitude would be reflected in other directions. It was disconcerting to hear of laymen doing work that required the services of a highly-trained expert, such as, for example, the application of the tuberculin test by poultry instructors. He did not know whether the Association had ever made any representations on that subject: it was worth considering.

On the other hand, the profession must adapt itself to the needs of the industry: the veterinary work must be done at a cost commensurate with the financial benefit it would yield. In such a case as dealing with a disease like fowl-

pox, the services of the veterinarian would be required for the purposes of diagnosis and instruction as to the manner in which it should be dealt with, or for advice as to immunisation at the appropriate season to prevent an outbreak. There could then be no objection to entrusting the actual application of that particular vaccine to the farmer.

In poultry work, the sphere of the practitioner lay in diagnosis and instruction. The poultry farmer could be shown that it paid him to employ a veterinarian: he could bring individual birds to the surgery and *post-mortem* examinations could then be done at the practitioner's convenience. Visits to the farm were only necessary when anything more than an examination of odd birds was required.

The application of the agglutination test to blood samples delivered to the surgery could be carried out with profit by quite a number of practitioners in different parts of the country: naturally it would not be worth while to do the work on a very small scale, but for those who were prepared to lay themselves out for it in suitable areas, it should be a very satisfactory branch of a mixed practice—again work that could be done at times convenient to the individual.

Practitioners were sometimes apt to grumble when something was taken out of their hands, but he did not think that, as a body, in respect of the subject under discussion, they had laid themselves out to meet conditions as they had changed, say, in the last 20 years.

Mr. K. D. Downham, of the Harper Adams Agricultural College, was rather disappointed because the paper had not gone more fully into what he thought would be one of the most important problems of the profession in the near future. He thought it was essential that they, as veterinary surgeons, should take more interest in poultry diseases. He did not believe that, as a profession, they had taken anything like their rightful position in regard to the poultry industry. They must get together and be of more help than they had been in the past. He could give instances of enormous losses in poultry as a result of the ignorance of ordinary disease conditions, and which could easily be avoided if some comprehensive system of dealing with those conditions were adopted. In the case of one outbreak to which he was called, and which came to the notice of the National Institute of Poultry Husbandry, there had been an average loss of 35 birds a day for three months before the owner attempted to do anything. On some days there had been 60 deaths. In another case, following a dispersal sale, an important official of a county council, who bought birds at the sale, found he had introduced fowl-pox into his own flock. Cases of this kind, possibly, were bound to occur, but the importance of trying to prevent them could not be over-estimated, and the veterinary profession should take a more active interest in the control of poultry diseases.

On the question of vaccines, Mr. Downham said they had with them Mr. Doyle, to whom they were very grateful for the work he had done in connection with fowl-pox. The fowl-pox vaccine was generally a very effective method of controlling that disease, but they did get cases in which it did not work. The question arose whether they were keeping sufficiently in front of them the importance of standardising all the vaccines which were used on birds. With regard to the tuberculin test on poultry, he considered it was valuable, but one could not go the whole way with it. One could not feel that this test was as valuable in the bird as in the cow. He quoted an experience in the testing of birds. He found that they all passed the test, but one of the birds died three weeks later from another cause, and lesions, with tubercle bacilli present, were found in the spleen and in the liver of the bird. It was one of those cases which showed that the test was not absolutely 100 per cent.

Many of the enlightened county poultry instructors, he thought, would very much welcome further assistance from the profession in the carrying out of their duties. He knew that from first-hand information, and he believed it would be supported by others. In one of the large provincial areas, a county poultry instructor had asked that he might have the assistance of a qualified veterinary surgeon in his work. Many of them felt that this was essential. Some poultry instructors admitted quite candidly that 80 per cent. of their work was disease work. Were they, as a profession, right in leaving the control of those diseases largely in the hands of the poultry instructors? No doubt veterinary advisers in different parts of the country, and the county veterinary officials, did give a measure of help, but from the point of view of the value of the poultry population of the country he considered it was not economical to leave things as they were at present.

It was perhaps hardly fair to criticise a paper in the absence of the writer, but he thought one matter, of some importance it seemed to him, might have received attention, and that was in regard to the treatment of blackhead in turkeys. They were probably all aware of the treatment by means of arsenical compounds (tryparsamide, neosalvarsan, etc.) for blackhead in turkeys, which had been praised lately. He would like, he added, practitioners' opinions as to whether they considered they were prepared to carry out intravenous injections in turkeys with the various preparations which were at present suggested. Many poultry instructors were doing this work, and no doubt many practitioners were doing it also; but he would suggest that the profession as a whole needed to keep itself at least on the same level as the laymen, who were specialising in poultry disease work.

Major-General Sir John Moore (London) said that Mr. Dobson had not mentioned a disease in young ducklings up to 13 weeks old which was given the name of keel disease on account of the young ducklings keeling over on their backs. It had been very prevalent in the United States, and he understood there had been a very extensive outbreak in Lancashire. Could they, he asked, be enlightened as to the nature of this disease?

Professor Gaiger (Liverpool) hoped they were not going to discuss individual diseases. He took it they were there to deal with the problem of poultry diseases as a whole, and how they were to be dealt with. He rather gathered there were different points of view. Mr. Marginson had told them there was not very much scope in this work for the practitioner. It was suggested that the general practitioner who had got to earn his own living had to consider whether he could go miles and miles to treat an outbreak of disease among poultry, or give advice, when he was hardly going to get a fee for it that was worth while. The case had, he thought, been very well put by Dr. Brook. He felt something wanted doing, and they all realised it was a very real problem. In Liverpool a great deal of material was sent in for examination. Some of it they wanted; some of it they did not want. In regard to agglutination tests, one had to consider in a scientific laboratory whether it was worth while doing thousands upon thousands of such tests—a soul-destroying business for any man—at a penny or twopence a test. If they were going to do hundreds of thousands of them, and keep a special laboratory for that kind of work, it was going to pay, but it was not going to pay in a research laboratory.

Mr. T. Wilson (Nantwich) quoted questions which, he said, had been put to him by a poultry instructor at a school of agriculture which he had visited.

(1) What treatment (apart from control measures) would you recommend for tapeworm? If pomegranate root bark, how much per 50 birds in the mash? (The books only give one teaspoonful, which is ridiculous).

(2) Where an outbreak of blackhead in turkeys is reported, have you found cases in which the liver lesions, instead of being depressed necrotic areas, are raised above the liver surface and of a dense white colour, somewhat resembling tumours? Presumably, one is right in diagnosing this as blackhead, although the lesions are not typical, while in both cases the cæcal lesions are typical and similar.

(3) Young pullets just coming into lay, and housed in a modern laying house, are found to be hanging about in a droopy condition. It is noticed that some individuals breathe with difficulty, and it is observed that when on the perches at night there is a good deal of throat rattling and coughing. The trouble seems to be very contagious and quickly spreads, and after a while dead birds are brought in for *post-mortem*. On opening the trachea it is found that the passage is occluded with a thick wad of solid, cheese-like pus (up to two inches in length). The lungs appear normal. There is little or no roupy discharge from the nostrils. The cheesy material is not fowl-pox, and the birds have been vaccinated against this. What would your report be (laryngo-tracheitis, roup, bronchial catarrh, infectious bronchitis, etc.)?

The poultry instructor to whom he was referring was very keen upon the veterinary profession taking up poultry diseases more, and was most anxious that there should be laboratories in certain parts of the country with a veterinary pathologist attached to them simply to deal with poultry diseases.

Mr. Wilson went on to state that he felt this was a branch of the profession which could very well be taken up by lady veterinarians. During the last few years he had met with a number of lady veterinary students, and he must say that most of them had come to the conclusion before they had been long in country practice that they had rather missed their vocation. Recently he had introduced them at a school of agriculture to poultry diseases, and they had looked upon that work in quite a different way and had been very keenly interested in it. It was a very suitable branch of work for lady veterinary surgeons, and one in which there was a tremendous amount of work to be done. Certainly it was not work which the majority of general practitioners had time to do without neglecting the more remunerative parts of their practices.

Mr. Pool suggested there was a danger of a wrong impression being created from what Mr. Wilson and other practitioners had said, namely, that the practitioner definitely was going to leave poultry work to the layman.

Mr. T. Dalling (Beckenham) said he thought it amounted to this, that the poultry industry had increased at such a rate that the veterinary profession had not kept up with it. Teaching, so far as he was aware, was not adequate in relation to poultry husbandry generally. To him it was rather alarming to think that a veterinary surgeon who might be called upon in connection with poultry diseases might not know even the very first principles of poultry husbandry. He had a great admiration for the county poultry instructors, because they certainly knew a considerable amount regarding general poultry husbandry, but he did not think that they should be allowed to deal with disease in poultry. He could give instances in which they had been entirely wrong in their diagnoses, where, instead of helping matters, they had helped to spread disease. He did not blame them; it was simply that they did not know.

In many instances they had had no help from the veterinary profession.

What he would like to see very much was a properly organised veterinary system in connection with poultry disease in this country. He could not see how the veterinary practitioner was coming into such a scheme; on the score of economy alone, he could not do it. But much could be done by a properly organised veterinary system of control. He thought veterinary colleges should pay more attention to poultry husbandry generally and poultry disease in particular. Dr. Brook's scheme appealed to him very much, and he would like to see it carried still further.

Mr. Wilson had hit the nail on the head when he mentioned that, in regard to disease among poultry, there was an opening for lady veterinarians. Some of the work, perhaps, might be done by poultry instructors, provided they were properly trained and under the control of veterinarians. The profession could help in that way, although he did not see how the practitioner could take over the administration in connection with poultry diseases in this country.

Mr. WILSON said he had not meant to suggest that the work should not be done by the profession. On the other hand, he considered it was a branch that could be specialised in by whole-time practitioners.

Dr. CROWTHER, Principal of the Harper Adams Agricultural College, after expressing his sincere appreciation of the opportunity which had been extended to him of attending Congress, and of joining in the discussion, said he did not profess to have the slightest specialised knowledge of veterinary work. Although his own personal interest certainly was concentrated very largely upon the livestock of the farm, in particular upon the cow, the pig and the fowl, it was entirely concentrated upon problems of nutrition. As to disease, indeed, he thought that perhaps the less he knew about it, or thought he knew about it, the better. He certainly would not attempt, therefore, to express to them any views that might be interpreted as claiming on his part any special knowledge from the veterinary side of the problem they were discussing. His only excuse for intervening was that, as an onlooker, he was endeavouring to assist the great industry of agriculture through the medium of education.

A brief reference had been made in the paper that morning to the extraordinary expansion of the poultry industry in recent years. He thought they might say, in fact, that it had only become an industry within the past ten years. Prior to that it was a much neglected side-line of the farm, and in the country generally was looked upon more or less as a part-time hobby in which numbers of enthusiasts engaged. It must, however, be evident to all who knew the countryside that there had been a great expansion in poultry keeping during the past ten or twelve years. In order to understand what that meant it was perhaps necessary to realise that the value of the total output of the poultry industry was very much greater than the total value of our wheat and barley crops, and very nearly equal to the value of the total output of cereals of all kinds. It was an industry with a total annual output valued at something between £20,000,000 and £30,000,000, and it had become, therefore, a very valuable asset. Moreover, it was about the only branch of agriculture which had been continuously prosperous during the difficult past years. Realising these things, the poultry industry was seen to be a development which everyone concerned with the national welfare should be glad to assist. But the industry, as he saw it from information he had, was heading steadily towards a very serious crisis, which might become, in fact, actual disaster unless it was realised in time and controlled in time. He would quote figures to illustrate what he meant. Many of them—perhaps most of them—knew there had been a very considerable development in the poultry industry of the egg-laying trial movement, until to-day they had a large number of those trials all over the country. Many of those trials had been brought under the supervision of the National Poultry Council. The two largest were the National Trials at Milford in Surrey, and those at the Harper Adams College. At those two trials every year between 5,000 and 6,000 birds were under special care for a period of 48 weeks, and every death that occurred was followed by a *post-mortem* by a qualified veterinary surgeon, so that they had complete records of all deaths and of the veterinarians' observations, with the causes of death.

He had summaries of the pen mortality records of the Harper Adams and National Trials for a period of ten years up to 1931-32. From those records emerged a most interesting fact, namely, that prior to five years ago (1927-28) the average percentage of mortality at those trials was never more than 5½ per cent. But what were the subsequent records? The following year (1928-29) the percentage was 6·1; and in successive years afterwards it was 6·7, 8·2, 8·9 and 12·6—an amazing and progressive increase in mortality. It might be said that these were trials of highly-bred selected pullets, kept under artificial conditions, or at any rate under conditions which were not general, but he had also the mortality figures for 1931-32 of 60 farms with 13,000 birds. As he had said, the average percentage mortality for the trials was 12·62; that for the 60 farms was 11·65. Clearly, then, the figures obtained from the egg-laying trials were indicative of something that was happening everywhere. Obviously, with a normal mortality in the poultry industry formerly 5 per cent., whereas to-day the figure was

12 per cent., there was something seriously wrong with that valuable national industry, and which called upon everyone who felt any sense of responsibility in relation to the industry to do what they could towards assisting in staying its development. Surely there was no profession upon which that responsibility rested more directly than upon the veterinary profession. He would suggest that the profession could no longer ignore poultry. Do what they would, say what they would, the responsibility for coming to the aid of those who required that aid and assistance could not be evaded.

Dr. Crowther, proceeding, said he would like to refer to one or two matters under discussion. First there was the question of the position of the county poultry instructor. He ought, perhaps, to let them know at once that it so happened that this year he was the President of the Association of Poultry Instructors and Investigators, but that did not mean he was going to defend any extension of the instructor's activities beyond what might be considered to be his legitimate work. He would remind them that the poultry instructor came into being as a result of the past policy of Governments of this country in giving no direct help to agriculture, of leaving agriculture, so far as economic conditions were concerned, to fight its own battle, while giving it indirect help in the way of educational and advisory work. They were, he knew, aware of one of the difficulties in agriculture generally, which was intensified in poultry husbandry, namely, the assumption that any sort of ignorant fellow could take up that particular occupation with success. With regard to poultry keeping, in the early days very large numbers of people took it up who had not the slightest inkling how to manage poultry. Obviously, the responsibility rested with the education authorities of providing some form of assistance for those people, and that need was intensified under the land settlement scheme after the war. The result was that poultry instructors had been placed in the different counties to give advisory assistance to poultry keepers. Those men and women, however, quickly discovered that the biggest single problem they were up against was the problem of disease. His audience, he said, would know better than he what facilities were available at that time for providing advisory assistance on poultry diseases. He gathered that many of them were far from satisfied with the position that existed even now, and he thought they must admit that at the time the poultry instructor began his job the provision was practically non-existent, and therefore he felt it incumbent upon him to give such assistance as he could out of his limited knowledge. But the trouble with the poultry instructor was that he was a specialist—and a very enthusiastic specialist—on poultry, and the specialist was often a man of little discrimination in the application of his enthusiasm. (Laughter.) From the fact that poultry diseases had been left so long to the poultry instructor he had come to think, as had also many intelligent poultry keepers, that they knew more about poultry diseases than the veterinary surgeon knew, and that, therefore, there would be no use in calling in a veterinary surgeon. Dr. Crowther further suggested that veterinary surgeons who did work for poultry keepers, and provided them with *post-mortem* reports, etc., were too inclined to wrap up the reports in scientific language which those who received them failed to understand. He thought they should endeavour as far as possible to use language which the recipient of the report would be able to understand, and if technical terms must be used, an endeavour might be made to give some little interpretation of them. After all, there were more people who understood the word cancer than there were people who knew what *carcinoma* meant.

With regard to the training of poultry instructors, in the past they had to be trained to meet the situation he had described, but the situation was changing. There were far more trained veterinarians at the disposal of the poultry instructor than there were ten years ago, and he hoped that, as an outcome of that discussion, there would be a great many more within the next ten years. (Applause.) So far as his own views on the training of the poultry instructor were concerned, no young fellow would go out of his Institute having in his mind that he was a veterinary surgeon—(laughter)—or that he knew any more than just the very elements of the subject of disease. What he particularly wanted was that his students, on going out, should be able to diagnose the early symptoms of trouble. He was sure his hearers would agree that the difficulties of their work were enormously increased when they were not called in early enough; when they were summoned far too late to take effective action. There must be countless instances where, if only the person in charge of stock had the knowledge to see trouble in its early stages, the veterinary surgeon could give far more effective assistance. That was certainly very true of poultry work. He did not see why his instructional work need go very far beyond that particular of imparting just so much of the elements of the subject as would enable the prospective poultry instructor or farmer to diagnose trouble in its earliest stages, and to discriminate between the trouble that was relatively unimportant and the trouble that, unless it had immediate and adequate attention, was likely to be thoroughly serious.

He would oppose with all the strength he could any suggestion of giving more than a very limited veterinary training to those men who were going out as general advisers to the poultry farmer, but he did think it was necessary—

even in the interests of the veterinary profession —that they should have some training. As to how far the veterinary assistance which was required in the poultry industry could be provided by the general practitioner or by some alternative method he did not feel able to advise them. He appreciated the difficulties of the situation. He had stressed the importance of the poultry industry to the nation, yet on the other hand they had to realise that it was carried on in the main by a multitude of small units of people, many of whom, within the economics of their poultry keeping, were incapable of spending more than extremely small amounts on matters which might require professional intervention. Such remuneration as a professional man might feel obliged to ask for his services might wreck the whole economy of the small man. That was clearly one of the problems they would have to solve if the practising veterinarian was going to undertake that work. It might be done, perhaps, in some areas under some co-operative system whereby the small units of the industry, instead of being dealt with separately, could be dealt with collectively in such a way as would make it a remunerative proposition. Incidentally, while on that subject, he would say that the poultry keeper would be found to be, in general, far more interested in his job than the average farmer, and with a far better knowledge of it, and that—which might appeal to the profession—generally speaking, he paid up much more promptly. (Laughter).

Regarding the development of anything in the nature of a co-operative arrangement for disease work, he thought it was desirable—and the moment was opportune—for them to get into touch with the leaders of the organised poultry industry with a view to discussing the whole situation. He could assure them that those leaders were tremendously interested in that question of improving facilities for veterinary research and advice for the poultry farmer. He could tell them that the Ministry of Agriculture had been repeatedly approached by the poultry organisations with a view to the provision of greater facilities for veterinary research and advice, so that the position was undoubtedly favourable for any approach to the poultry leaders. The industry was the only specialised section of the agricultural industry which had a really strong national organisation at its command. There were, in fact, several powerful societies, the biggest of which was the Scientific Poultry Breeders' Association, with over 20,000 members, a very large annual income, and very large resources. That association, he believed, at present spent something like £1,000 a year on definite disease research appertaining to the poultry industry. There was also the Lancashire Utility Society, and at the head there was the National Poultry Council, with which all the big societies were affiliated. His suggestion to them was that this Council was the body to approach in the first instance on this question of co-ordination between all branches of their profession and the poultry industry for the purpose of giving greater assistance by way of advisory work, etc. He apologised for having spoken at such length. His excuse must be that he had very much at heart the subject under review. (Applause.)

The Chairman said there was just one question he would like to ask, and that was with regard to "caponing." Was it practised to any great extent in this country from a commercial point of view, and, if so, who undertook it? He thought that such work, if it were carried out on a large scale, should be done by a competent man, and that man, he considered, was the veterinary surgeon.

THE REPLY

Mr. Doyle, in his reply, said his task was a fairly easy one, because much had been said which he would have liked to say and which he could not have hoped to deal with more thoroughly. With much that had been said, therefore, he was in complete agreement, but he was not in agreement with Dr. Brook and Mr. Marginson.

There were certain points in connection with the question which he thought the veterinary profession had not realised. One was the magnitude of the poultry industry. There were many veterinary surgeons who seemed still to look upon it as a backyard pursuit. But the poultry industry to-day, as Dr. Crowther had told them, had become a very important branch of agriculture, and there were many big farms in the country, with a large amount of capital invested. Secondly, the veterinary profession had not realised that this great industry was heavily infected with contagious disease, or that the disease with which they would be called upon to deal was contagious disease and not ordinary simple disease. Beyond doubt, the industry had been very seriously interfered with, and one should not regard a 5 or 6 per cent. increase in the number of fowls in the country as a normal increase.

The work of the practitioner would, he suggested, be mainly in an advisory capacity, seeing that almost the whole time he would be dealing with contagious disease. The modern poultry farmer did not treat the individual bird. If a bird was sick, he killed it; it was not worth while risking the health of the whole flock for the sake of one bird. Laboratory work had been mentioned. It did not require a laboratory to diagnose tuberculosis, or fowl-pox, or blackhead in turkeys, which were important diseases, or dietetic errors, although the laboratory was necessary for one or two other diseases, such as bacillary white diarrhœa and fowl typhoid.

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For most diseases, however, the practitioner could visit the farm, diagnose the trouble, and recommend suitable methods of control. One of the difficulties the laboratory worker encountered was that, following diagnosis, he had to endeavour to control the disease by correspondence with the farmer.

Dr. Crowther had raised the question of technical language in reports. He hardly agreed as to that. He did not see how they could possibly make every report plain to the ordinary poultry keeper. Such reports should come into the hands of a veterinary practitioner, who would then visit the farm, study the conditions on the spot, and advise the owner, for which they could get one fee—not a fee for every bird they looked at.

Poultry farmers were willing to pay reasonable fees, and that, he thought, was proved by the many thousands of pounds they paid annually to the laboratories. To say that poultry farmers were not prepared to pay fees was ridiculous. He had heard of people losing 2,000 head of poultry, not valued merely at 2s. 6d. a head, the figure mentioned by Mr. Marginson, but, as Dr. Crowther would agree, at something like 7s. 6d. a head. There were few poultry farmers in the country whose flocks had not been ravaged by contagious disease, and who were not prepared to pay for advice.

Poultry instructors were experienced in their own particular line, but they certainly knew nothing about disease. The advice they gave was usually wrong. The only reason they were taken into account on the question of disease in poultry was because the veterinary profession was not doing its duty. He thought it would be advisable for those who were starting in practice seriously to consider this question of poultry diseases, and see whether they could not bring about some improvement in the present unsatisfactory state of affairs.

The Chairman, on behalf of the meeting, expressed cordial thanks to Mr. Dobson for his paper, to Captain Doyle for so ably deputising for Mr. Dobson, and to Dr. Crowther and the other speakers.

Professor Gaiger suggested that some resolution ought to be passed as to summoning a conference of parties interested in poultry diseases, in order to discuss the best means of dealing with the problem.

After some further discussion, the following resolution, moved by Mr. Lamont and seconded by Dr. Montgomerie, was carried:—

"That a committee of the National Veterinary Medical Association be formed at the earliest possible moment to foster a knowledge of poultry diseases, and to act as an advisory committee to the National Veterinary Medical Association on questions of policy."

Dr. Montgomerie said he took it that the idea behind Mr. Lamont's resolution was that, before going into a conference, their Association should have a policy, and should know the line they were going to take.

The following further resolution was also passed, on the proposition of Captain Pillers, seconded by Mr. Tweed:—

"That a committee of the National Veterinary Medical Association be formed at the earliest possible moment to foster a knowledge of parasitic diseases, and to act as an advisory committee to the National Veterinary Medical Association on questions of policy."

HORSE-BREEDING IN INDIA: SIR VICTOR SASSOON'S OFFER

Since the formation of the National Horse Breeding and Show Society of India by Major-General Sir Bernard James about ten years ago much has been done to encourage horse-breeding in India and to form a body of opinion on the subject. But the view has often been expressed that without greater help from the Turf Clubs no great progress will be possible.

"A scheme has just been propounded by Sir Victor Sassoon, whose interest in racing in India is well known, which seems likely to do more than anything yet attempted for the promotion of horse-breeding in the country," says *The Times*. "It aims at interesting small breeders in the production of thoroughbred stock, as distinct from the established studs. At present the small breeders have not the money, nor are they in a position, to undertake the risk of breeding blood-stock.

"Sir Victor Sassoon's scheme proposes that a number of thoroughbred mares shall be provided and lent to small approved breeders, and be mated with thoroughbred stallions without fee. Any offspring of these mares which suffers from no unsoundness that would make it unsuitable for racing will, on attaining two-and-a-half to three years, be sent to Bombay at the expense of the Western India Turf Club, and there be submitted for sale by auction without reserve. A minimum price will be guaranteed to the breeder—Rs. 1,000 to Rs. 1,250, according to age—and any excess over that price will be divided between the breeder and the fund of the scheme.

"Sir Victor Sassoon very generously starts the scheme by presenting the thoroughbred mares which he now has in India, and he will hand over fillies now in training so that they may be put to stud at an age of not later than six. He will also make available certain brood mares from his stud in England. To start a fund for the working of the scheme he has deposited Rs. 10,000 with the Western India Turf Club, which has agreed to be secretary and treasurer of the scheme. A committee, which includes the Director-General of Remounts as Chairman, has been formed to administer the scheme, and it is hoped to put it into operation at an early date."

* * * * *

It was reported at a meeting of the directors of the Highland and Agricultural Society that the show held in Dundee last June had created a record.

The secretary, Mr. John Stirton, stated that the accounts showed a profit of £4,835. Not only was the attendance at the show a record one, but the profits also were a record. The nearest approach to it was the Glasgow Show of 1925, when the profit amounted to £4,226.

General Articles

AN IMMUNISATION CAMP

A. FULTON, B.V.Sc., D.V.H.
British Guiana

In many of our Colonies rinderpest is still one of the major problems in the cattle industry, and its control and eradication is one of the chief concerns of the veterinary departments of these Colonies. The measures taken are usually those which produce an active immunity against the disease. These measures have proved very successful and are particularly suitable where cattle are constantly exposed to reinfection from areas beyond control. After the initial immunisation of all the cattle of an area the young stock of succeeding years have to be dealt with and this is done at regular intervals, either once a year or once every two years. This involves the establishment of immunisation camps throughout cattle areas. These camps are not necessarily solely for anti-rinderpest measures; they can be used in a campaign against any epidemic or where large numbers of cattle have to be controlled for any purpose.

In choosing the site for a camp the three chief considerations are a plentiful water supply, sufficient grazing area, and accessibility. The water supply is a serious problem in many tropical countries that have a dry season, and the dry season is often the most suitable time for conducting operations. The number of camps to be established in a district depends on the density of the cattle population and the extent of the area. Often native prejudices have to be considered; one tribe may object to take their cattle into another tribal area. Accessibility includes being within reasonable distance of every part of the area that the camp serves and also in easy communication with the outside world for the supply of serum, etc.

The buildings of a camp consist of housing for the staff, a small building for stores and the preparation of instruments, etc., housing for animals kept for the production of virus, and kraals for the cattle visiting the camp. Usually the staff can be lodged in a near-by village, and often there is a Rest House (Government building for the accommodation of visiting officials) which the veterinary officer can use. The store and housing for animals consist of a simple oblong building comprising two or more loose boxes, a large room furnished with shelves and tables for use as a store and field laboratory, an open shed for bleeding virus makers, etc., and a room for a caretaker. This building may be made of local materials, *e.g.*, mud walls and thatch roof, or of something more lasting and substantial, depending on the money available. The kraals for the cattle visiting the camp are made of whatever local material is available. An addition to a camp that has been found very useful is one or more crush-pens. (See Addendum.) These permit of the rapid and efficient control of large numbers of cattle by few herdsmen. They do away with the necessity for catching, casting, and tying the cattle for inoculation, branding etc., and there is less risk of accidents to cattle or men.

The following is a description of a camp which was recently in operation: It is situated about a mile from a river that does not dry up during the dry season and it is close to a motor road that is passable nearly the whole year round. In the vicinity there is plenty of grazing. This camp deals with an area of about 400 square miles that contained about 15,000 head of cattle. It was first used for the initial immunisation against rinderpest of the cattle of the area. In the future it will be used periodically for the rinderpest immunisation of the young stock as they grow up. It will be used any time when the collection and wholesale treatment of the livestock of the area is necessary. For the initial immunisation of the 15,000 head of cattle the camp was in operation for three months during the dry season. The camp was run by a veterinary officer with a native staff of one experienced literate, four literate learners (youths who have passed a certain standard at school, put on a period of probation and instruction with a view to qualifying as permanent officials of the Veterinary Department), and six departmental police (illiterate). First the cattle in the immediate vicinity of the camp were immunised, and then those beyond, gradually increasing the circle of area immunised. The cattle were brought to the camp in herds of a size that could be conveniently dealt with, from 500-800 head of cattle, and they were accompanied by a certain number of the owners' people who helped in the control and herding of the cattle during their sojourn at the camp. Immunisation was by the "simultaneous" method—in which a small dose of virulent blood and a large dose of immune serum are inoculated separately at the same time. The immune serum was obtained at this camp by bleeding recovered animals from recently-immunised herds at the camp. It is called "field" serum, as distinct from serum obtained from the laboratory. When laboratory serum is available the work can be speeded up. The virulent blood is obtained from artificially-infected young bulls (virus makers), which are kept isolated in the loose boxes of the camp building. Two new virus makers are chosen from each herd on its arrival at the camp and these are infected from previous virus makers. This allows for a constant supply of virus.

The following shows the progress of a herd at

the camp: one of the departmental police is sent out to an area with instructions to collect a certain number of cattle (a definite number is specified, as often there is a limited amount of serum available) and have them arrive at the camp on a given day. The herd arrives in the evening and is kraaled and inspected. The next morning the herd receives its simultaneous inoculations and each animal is earmarked (immunisation mark). In the evening, on the return of the herd from grazing, 100 head of the young adults are branded with a number on the horn. The temperature of these 100 animals is taken for the first ten to twelve mornings of their sojourn at the camp and a record kept. That time includes the normal duration of the thermal reaction to immunisation. Evening temperatures in the tropics are unreliable. These 100 animals act as controls to the reaction and later, when the reaction has subsided, those which had the best thermal reaction are used for the production of immune serum for some succeeding herd. Each day, after morning inspection, etc., the herd goes out grazing, then returns to the kraals in the evening, when it is again inspected. The rinderpest reaction is carefully watched. Any very sick animal is withdrawn from the herd and nursed. The bleeding of suitable recovered animals for serum is usually done about the 21st day after the simultaneous inoculation. By this time the reaction has subsided, the animals have regained condition and the blood has become highly protective. About four days after bleeding, if the herd is fit, it is evacuated.

A new herd arrives at the camp every fifth to seventh day. So, when the camp is in full working order, there are four or five herds present in the camp at the one time. (Anything from 2,000 to 3,000 head of cattle.)

Summary of work at this particular camp:—

(1) Simultaneous inoculation, ear marking, and virus alone inoculation of every animal.

(2) Numbering of 100 controls in each herd and taking the morning temperatures the first twelve days after simultaneous inoculation.

(3) Inspection of each herd morning and evening.

(4) Nursing and treatment of very sick animals. (These mostly occur from concurrent disease, *e.g.*, redwater, trypanosomiasis, etc.)

(5) Bleeding of selected recovered animals (about 60 head from each herd at this camp) and the production of immune serum from the blood.

(6) Investigation of any disease or condition affecting the cattle.

(7) Keeping of records.

Once the veterinary officer has thoroughly organised his camp his work should consist entirely of supervision, control and investigation. A mistake apt to be made by young veterinary officers is failing to appreciate thoroughly that natives can be trained to do all routine work and operations, and that they can become very efficient at it. Their labour is cheap. There is no point in the veterinary officer exhausting himself wielding a syringe, trocar and canula, etc., while perhaps his native staff, who can do the work, are idling, and the whole work of the camp is suffering from lack of supervision.

. . . . .

ADDENDUM

A Crush Pen

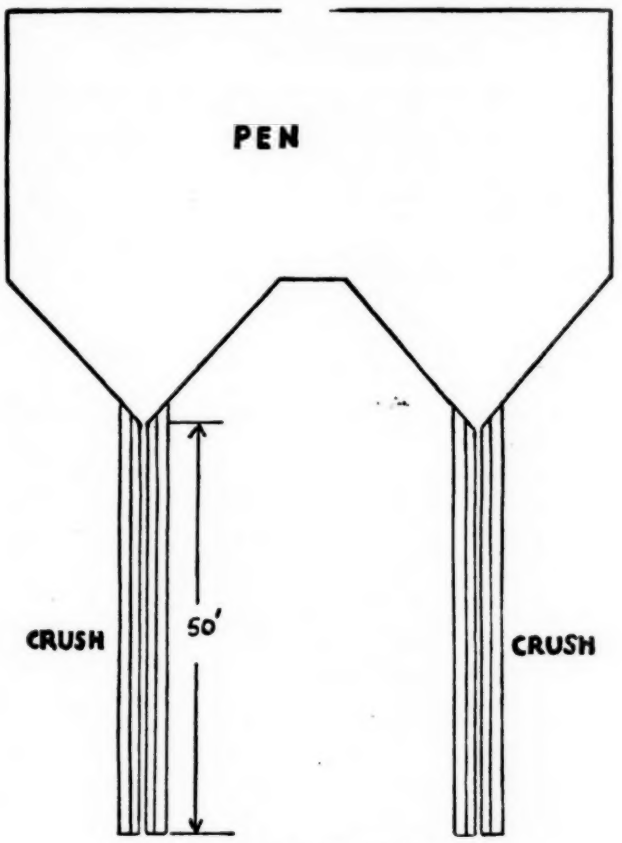
Although the principle of the crush pen is well known, information about its construction and use is difficult to obtain. The crush pen is, in the writer's experience, of immense value in the rapid control of large numbers of cattle for such simple operations as subcutaneous inoculations, branding, temperature taking, etc., so a detailed description may be of interest.

A crush pen is a pen with a funnel-shaped exit which leads into a long narrow passage, the crush. On driving a herd of cattle into the funnel the herd is thinned out and the animals pass in single file along the crush. The crush is made narrow enough to prevent lateral movement of the animals and when the exit of the crush is closed and the cattle packed tightly in, they are sufficiently immobilised to permit of minor operations on them.

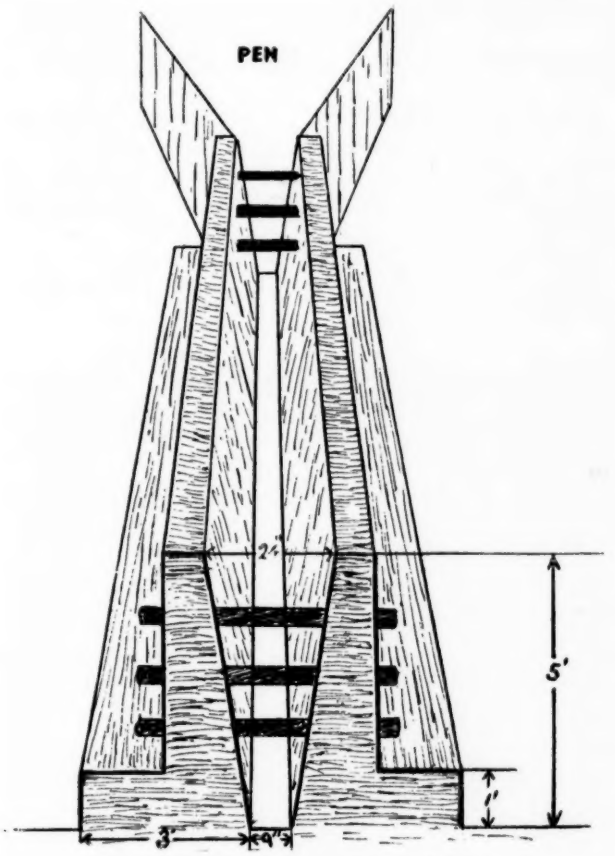
The accompanying sketches are of the crush pen at the immunisation camp described in this article.

The plan shows a large pen, from one side of which two parallel crushes are led off. The object of the two crushes is that while operations are going on at one, the other is being emptied of cattle which have been dealt with and refilled with a fresh lot, so avoiding any delay to the operators (inoculators), and making the work continuous. Each crush holds about twelve cattle. One crush is a little narrower than the other and it is used for the smaller animals. The shedding of the herd into two lots of larger and smaller animals is done by herdsmen in the pen. The measurements given in the sketch are suitable for a very small type of cattle ("West African Shorthorn," which rarely exceeds seven hundredweights weight). The walls of the crush can be made of stone and mud, as at this camp, but a stronger and more lasting structure could be made with concrete.

The essential features of the crush are that it is narrow enough to prevent any but the very slightest lateral movement of the animal in it and that it is wedge shaped to prevent the animal from lying down. The width at the bottom of the crush should be just enough to allow the animal to stand, and the width at the height of the haunches just the width of the



Plan of Crush Pen



Perspective Sketch of Crush

haunches. The walls should be high enough to prevent the animals from seeing over the top. Owing to the height of the walls a step is built along the outsides of each crush. There are holes in the walls at each end of the crush through which bars can be slipped to make gates.

To get the animals into the crush gentle persuasion is much more effective than violent beating. Once the animals have started to stream along the crush the exit is closed by slipping in the bars. The animals are then driven up and packed tightly. The more tightly they are packed the better. Labourers stand on the step on one side of the crush and steady each animal by holding it by the nose while the operator is operating from the other side. When the operations are finished the exit is opened and the animals move out. There is little difficulty in refilling, as those in the funnel naturally follow those leaving the crush.

The chief advantage of a crush pen is that a smaller staff of herdsmen is required for the handling of large numbers of cattle for minor operations. Other benefits are: it eliminates the necessity for catching, throwing and tying the cattle and the resulting risk of injuries to man and animal; it lessens confusion and delay caused by unruly animals. On one occasion when the work was timed at the camp mentioned in this paper it was found that a herd of 800 head of cattle were double inoculated and earmarked in just under two hours. Without a crush pen more than four times the number of labourers would have been required to do the same work in that time.

MILK SUPPLY PROBLEMS

The Royal Sanitary Institute announce that a Sessional Meeting on a subject which is occupying much attention at the present time will be held at the Institute, 90, Buckingham Palace Road, London, S.W.1, on December 12th, 1933, at 5.15 p.m. A discussion on "Practical and Scientific Problems of the Milk Supply and their Laboratory Control" will be opened by Mr. Ben Davies, Director of Messrs. United Dairies, Ltd. The Chair will be taken by Professor W. W. Jameson, M.A., M.D., F.R.C.P., D.P.H., Dean of the London School of Hygiene and a Member of the Council of the Institute.

* * * * *

The Brown Institution Lectures for 1933, entitled "Present-day Problems in Bacteriology," will be delivered by Professor F. W. Twort, M.R.C.S., L.R.C.P., F.R.S., Professor of Bacteriology and Superintentent of the Brown Institution, at the London School of Hygiene and Tropical Medicine, on December 13th, 14th, 15th, 18th, and 19th, at 5 p.m. Admission free, without ticket.

NATIONAL VETERINARY ASSOCIATION OF ROUMANIA

HEADQUARTERS FOR THE PROFESSION

The National Veterinary Association of Roumania has recently built new headquarters for the profession in Bucharest, and we are pleased to be able to reproduce a photograph of the very handsome building that has been erected.

The project dates from 1921, when it was decided to raise a building fund by a special method. All the members of the Association agreed to pay into the fund for ten years 5 per cent. of their salaries or professional incomes. By 1929 enough money was available to commence the work, and land was purchased in the Carol Boulevard. By means of a mortgage the building has been completed and equipped, and it was formally opened by King Carol on February 25th last. The Veterinary Director-General, Ionescu Braila, who conceived the idea and pushed it forward, in an address explained the plan and purpose of the proposal. The building comprises large suites of offices, the principal of which are let to the Ministry of Justice. The accommodation available for the work of the Association is ample, and it is confidently anticipated that the income from rentals will enable the Society within a very short period to liquidate the mortgage, pay a reasonable interest on the capital borrowed, and provide funds for assisting other professional institutions in Roumania.

BLOEMFONTEIN MUNICIPALITY'S CLYDESDALE STUD

N. M. CLAYTON, M.R.C.V.S.

Director of Municipal Abattoirs, Bloemfontein

In this modern age, when one reads so much about motor transport replacing the horse in transport or haulage, I would like to bring to the notice of interested readers the endeavours of the Bloemfontein Municipality to keep the horse "on the map."

When I accepted the post of Abattoir Director and Municipal V.O. to this municipality in 1924, I discovered that there were municipal stables containing some heavy draught and other horses and mules. Some of the animals were very weedy. These animals were being used for water transport, night soil work and general haulage, but, in addition, quite a lot of this work was being done by tractors and other mechanically-driven vehicles.

Very fortunately, our new city engineer is an inspired man and very fond of a good horse. I do not wish to relate all the difficulties that had to be overcome before we were able to build up the finest Clydesdale stud in South Africa, and for the size of the town (50,000 inhabitants) our new modern stables are "a joy to behold."

We commenced our modern stud by purchasing the best Clydesdale stallion in the country—Munificent (20111 C.S.B. Great Britain and Ireland) for £200. I can state that this animal, in progeny, stud fees and prize awards, has more than repaid the cost, and he is still going strong.

In 1928 the City Engineer, the Chairman of Public Works and I visited the estates of the Duke of Westminster, and we were able to purchase some pure-bred Clydesdale mares, three-quarter and half-bred mares and some promising foals. Some of the mares were in-foal and had foal-at-foot. We purchased them very reasonably. Since then some very fine animals have been bred. At present our stud contains 49 Clydesdales (all kinds), a few Shire and other geldings and 85 mules. Our latest capture arrived last week from overseas, namely, the five-year-old Clydesdale stallion, Bensign, son of the unbeaten Scottish champion, Benefactor. The animal cost us £300 and will now be placed at the head of the stud to replace Munificent. Bensign is an outstanding stallion; a worthy son of a worthy sire. Bred by Messrs. T. and M. Templeton, of Sandyknowe, Kelso, he has scored some notable successes at British shows. As a yearling he was placed second at the Scottish Stallion Show and second at Kilmarnock and Glasgow. At the same age he also captured the championship at the Royal Harrogate Show, whilst last year he was second at the Glasgow Summer Show.

My chief aim in submitting this article is to

point out that the project is proving satisfactory, economical and self-supporting: so much so, that the tractors are being withdrawn, and at present it is estimated that the use of the horse instead of the power-oil machine will bring about annual economies approximating £1,000.

The Council has been very enthusiastic about the whole matter.

All the animals (of workable age) are being utilised in the town's services and it gladdens one's heart to see these noble animals working in the streets. The horses are kept in the pink of condition and are fed soundly. Visitors remark on their good appearance. We have very little sickness. The cost of daily feeding per head averages 1s. 1d.

Another interesting feature is the appearance of Scotch carts with pneumatic tyres (two-wheeled) in this town, drawn by one horse. These carts have been used in England, but this is the first time out in this country. Experiments have proved conclusively that more material can be transported by this type of cart than by any other kind of the same size yet invented. In addition, no hardship is imposed on the inspanned animal.

Over £400 to date has been awarded in prize money at the various show events throughout the country.

I reproduce extracts appearing in *The Farmer's Advocate*:—

(1) Rand Show (May, 1933):—

"The Bloemfontein Municipality added to their numerous collection of awards with their splendid Clydesdales, Munificent, Westminster Heartsease and Sonia gaining first prizes."

(2) Central Show, Bloemfontein (May, 1933):—

"Among the 120 entries (of horses) were a number of outstanding animals . . . . and the Bloemfontein Municipality's Clydesdales Munificent, Pansy and Sonia, all of which won premier awards."

(3) Rosebank Show, Capetown (April, 1933):—

"Heavies.—The string of Clydesdales exhibited by Bloemfontein Municipality again aroused the admiration of the judge, Mr. J. J. Morton, and spectators. The magnificent stallion Munificent, which the judge described as 'a grand type with beautiful feet and pasterns and an all-round good one,' gained another first prize. In the class for mare or colt three years and over, Westminster Heartsease, which has a splendid show career, was placed third, the first prize going to Messrs. Rabie and Sons' Lily Eligible, and the second going to the Municipality's Pansy. The judge remarked that he was influenced by the fact that the first-prize horse was the younger. The Municipality's Sonia and Viola were placed first and second in the class for S.A.B. filly under three years.

"Strangely, the position was reversed in the class for mare or gelding three years and over (heavy draught), Mr. J. Wilson awarding the first prize to Heartsease, the second to Margaret, three-quarter-bred, and the third to Dellia Eligible, Lily Eligible being disqualified owing to a blemish."

HORSE *versus* MOTOR TRANSPORT

THE OTHER SIDE OF THE PICTURE*

Major-General SIR JOHN MOORE, K.C.M.G., C.B., F.R.C.V.S.

The controversy which for some time past has been waging in the pages of *The Evening Standard* regarding restrictions to be put on the horse and horse transport in the streets of London, inspires me, as President of the National Horse Association, to present the other side of the picture. The points at issue may be summed up in (*a*) Traffic congestion, (*b*) Economy in working, (*c*) Convenience and adaptability, (*d*) Commerce in relation to agriculture.

(*a*) **Traffic Congestion.**—Considering that it is the great increase of motor traffic in both numbers and volume which has brought about the present state of traffic congestion, it is questionable whether the abolition of horsed transport would effect any material change. The real solution of the problem is far removed from the horse question. In most provincial towns horse traffic comprises about 8 per cent. of the total wheeled traffic found on the streets. In London it is considerably under 5 per cent. and on the main passenger traffic routes of London the percentage is extremely small. Drivers of horsed transport, under instructions from their firms, are careful to avoid main passenger traffic thoroughfares and ply along collateral streets where better progress can be made. All the same, it would be unwise to ban horsed transport from any particular street which may be the most direct route from point to point in delivery of goods.

(*b*) **Economy of Working.**—Transit costs are a vital consideration in every branch of transport, and there are scores of instances where low delivery costs take precedence over speedy transit. It has been abundantly proved that, for short distance and frequent stops, horsed transport carries economic advantage over motor transport. As long as the basis of all business is practical economy, the horse will be used. The accompanying table will make this clear.

* Issue No. 30, Publications of the National Horse Association of Great Britain, 12, Hanover Square, London, W.1.

Comparative Transport Costings

(Supplied by a Leading London Stores.)

Costings on a daily computation, 313 working days per year, eight hours per day. As for 1931.

Single Horse.	s.	d.
Drivers' Wages including Insurance	10	1½
Stablemen's Wages (weekly wage divided by number of horses, *viz.*, 46)...		10
Feeding (prepared by stablemen, 39 for 30 lots)	1	6½
Stabling (33 lots)	1	3½
Harness Depreciated in 5 years		1¾
Depreciation on Horse, depreciated in 8 years...		7¼
Repairs to Harness		½
Veterinary Attendance, max. £10 per year ...		¼
Shoeing		6
Depreciation on Vehicle, 15 years' life ...		4¼
Body Maintenance	1	1¾
Insurance		2¼
Van Washers' & Harness Cleaners' Wages ...	1	2½
Interest on Capital		6¾
	£ 18	6¾

Pair Horse.	s.	d.
Drivers' Wages (including Insurance)	10	7½
Stablemen's Wages (weekly wage divided by number of horses, *viz.*, 46)...	1	8
Feeding (prepared by stablemen, 7 horses for 3 lots)	2	10¾
Stabling (33 lots)	1	3½
Harness, Depreciated in 5 years		3¼
Depreciation on Horse, depreciated in 8 years...	1	1½
Repairs to Harness		1
Veterinary Attendance, max. £10 per year ...		½
Shoeing		11¾
Depreciation on Vehicle, 15 years' life ...		9½
Body Maintenance	1	3¼
Insurance		2¼
Van Washers' and Harness Cleaners' Wages	1	2½
Interest on Capital	1	2½
	£1 3	7¾

25 cwt. Van.	s.	d.
Drivers' Wages (including Insurance) ...	11	5½
Petrol, 13 m.p.g.	1	6½
Oil, Grease and Rags		3
Garaging, divided by number of Cars ...		11¾
Garage Fitters, Washers and Stock-keeper ...	2	0
Licence, £25	1	7¼
Insurance on Vehicle		7
Depreciation on Vehicle, 15 per cent. ...	4	9½
Repairs to Chassis, life experience		¼
Body Maintenance	1	2½
Tyres		6¾
Interest on Capital	1	8¾
	£1 7	0½

5 ton Van.	s.	d.
Drivers' Wages (including Insurance) ...	13	1½
Petrol, 5 m.p.g.	4	2½
Oil, Grease and Rags		3
Garaging, divided by number of Cars ...		11¾
Garage Fitters, Washers and Stock-keeper ...	2	0
Licence, £48	3	1
Insurance on Vehicle		8
Depreciation on Vehicle, 15 per cent. ...	7	0
Repairs to Chassis, past 2 years' experience ...		10
Body Maintenance	1	6½
Tyres	1	1
Interest on Capital	2	10½
	£1 17	7¾

A leading London transport firm, basing its figures on the mileage of 20 miles per day, give costings as follows:—

	Light Horsed Vehicle (One Horse.)	Heavy Horsed Vehicle (Two Horses.)	Motor Van (25 cwt.)	Heavy Lorry (5 tons).
	s. d.	s. d.	s. d.	s. d.
Cost per day of 8 working hours	17 9	25 7	24 2	36 6
Cost per hour ...	2 2½	3 2½	3 0¼	4 6½

A careful study of these figures will show most conclusively that for town delivery the horse has a function to perform, and the substitution of mechanical haulage will not result in more efficient service but will make for greater cost. The horse provides the most suitable medium whereby short distance work can be conducted on a sound business footing.

(*c*) **Convenience and Adaptability.**—A surprisingly large number of warehouses, mills and even streets are not suitable for accommodating motor traffic, and are only accessible to horse vehicles. The half-lock of the horse vehicle permits turning at right-angles. The motor vehicle does not lend itself to this facility. It is very improbable that any motor vehicle could ever be devised to supply the place of a horse under considerations where space is limited.

(*d*) **Commerce in relation to Agriculture.**—In these days of agricultural depression the ordinary farmer and smallholder could never afford a tractor to till his land, harvest his crops, and perform the common duties of farm work. Horses are essential for the necessities of farming operations, and the raising of horses is a valuable asset to the farmer. In other words, the horse is a rent payer. Broken in at two-and-a-half years, he is used for the common work of the farm and earning his keep up to four years old, when he is sold to a commercial firm at a good profit to the farmer. As regards the cost of tractor *versus* horse work on farms, experiments have shown that the cost of an hour's horse work was estimated at 4¾d., while the cost of a tractor averaged 3s. per hour, and on the principle that a tractor will do twice as much as a pair of horses in an hour, the cost of horse work as against tractor is therefore 1s. 7d. to 3s.

The whole question of horse *versus* mechanical employment resolves itself into a matter of expense, and whatever is cheapest is surely the best. The present agitation threatens the very existence and livelihood of a large number of horse-vehicle owners, small traders, horse keepers and carmen. It is a matter of life and death to thousands of poor men in Southwark, Lambeth, Bermondsey and other boroughs and

constituencies in the Metropolitan Area. There is room for both horse and motor transport in the common activities of life, and in the carrying out of industrial undertakings. In any case, it is quite within the bounds of possibility that some amicable working arrangements could be made to fit in with London's increasingly difficult traffic problem.

Horses in the Metropolitan Area

Drinking Trough Statistics

We publish below a table of statistics (compiled by the Metropolitan Drinking Fountain and Cattle Trough Association, 70, Victoria Street, Westminster, S.W.1), of the numbers of horses drinking from 66 of the numerous troughs in the Metropolitan Area, in one day between 9 a.m. and 5 p.m. (seven hours), June to August, 1931, 1932 and 1933.

Trough situated at	No. of Horses 1931.	No. of Horses 1932.	No. of Horses 1933.
Addison Bridge, W.14	35	38	64
Battle Bridge Road, N.W.1 ...	101	112	113
Bethnal Green Road, E.2 ...	187	172	167
Bessborough Gardens, S.W.1...	78	48	31
Bishopsgate, E.C.2	250	265	310
Brixton Church, S.W.2... ...	72	116	119
Byward Street, S.E.1	655	810	700
Caledonian Road, N.7... ...	152	135	154
Camberwell Station Road, S.E.5	45	58	34
City Road, E.C.1	223	258	223
Clapham Common, S.W.4 ...	123	131	104
Commercial Street, E.C.1 ...	342	307	320
Cornhill, E.C.3	52	47	64
Cromwell Road, S.W.7 ...	108	133	135
Dalston Lane, E.8	145	166	169
Dartrey Road, S.W.10 ...	115	100	112
Eaton Square, S.W.1 (2) ...	194	184	194
Eldon Street, E.C.2	227	275	267
Fair Street, S.E.1 (3)	1025	760	915
Farringdon Road, E.C.1 ...	113	197	212
Fernhead Road, Paddington ... (Erected July, 1933.)			42
Finchley Road, N.W.11 ...	35	42	40
Finsbury Square, E.C.2 (2) ...	525	436	500
Fulham Road (Moore Park Rd.), S.W.6	94	126	128
Gt. Eastern Street, E.C.2 ...	185	205	222
Gt. Portland Street Station, W.1	253	274	295
Gt. Western Road, W.11 ...	152	130	148
Holland Street, S.E.1 (2) ...	716	690	657
Hornsey Gate, Finsbury Park, N.6	46	63	67
Horseferry Road, S.W.1 ...	132	109	127
Hyde Park Corner, W.1 ...	118	139	153
Hyde Park Gate, S.W.7 (2) ...	81	51	56
Islington Green, N.1	91	75	95
Jubilee Street, E.1	365	310	330
Kennington Lane, Lambeth ... (Erected March, 1933.)			151
Leman Street, E.1	678	715	765
Limehouse Church, E.14 ...	525	340	341
Lowell Street, E.14	521	485	530
Marble Arch, W.1	72	119	128
Old Kent Road, S.E.1 ...	144	115	120
Ossulton Street, N.W.1 ...	570	525	590
Park Lane, W.1	196	169	266
Park Road, Marylebone, N.W.1	42	59	28
Pentonville Road, N.1 ...	38	56	80
Pitfield Street, N.1	250	226	270
Queen's Road, W.2 (2)... ...	147	101	103
St. George's Circus, S.E.1 ...	276	185	182
St. James' Road, N.7	100	161	170
St. John's Street (Centre), E.C.1	115	58	71
Smithfield Market, E.C.1 (2) ...	672	605	615
Strand, W.C.2 (by Gladstone Statue)	285	206	300
Strand, W.C.2 (St. Mary le Strand Church)	158	177	295
Stamford Hill, N.16	89	31	51
Stratford Broadway, E.15 ...	231	141	157
Spencer Park, S.W.18	99	34	50
Surrey Docks, S.E.16	307	195	192
Tabard Street, S.E.1	418	438	452
Temple (Victoria Embankment), E.C.4	101	55	66
Thurloe Square, S.W.7 ...	51	63	66
Tower Bridge Road, S.E.1 ...	570	650	545
Willesden Green, N.W.10 ...	58	27	34
Wood Green (Fishmonger's Arms), N.22	62	22	30
Woolwich Docks, E.16 (2) ...	143	89	113
York Road, Battersea, S.W.11...	179	154	180
York Road, King's Cross, N.1...	71	76	105
Yorkton Street, Hackney, E.2 ...	174	89	120

INSPECTION OF COWSHEDS

Representatives of rural district councils of Somerset, in conference at Taunton recently, discussed the suggested transfer to county councils of the functions of district councils regarding the supervision of dairies and cowsheds. The subject was introduced by Mr. J. G. Vaux, who is chairman of Yeovil R.D.C. He set forth reasons for the retention by the rural councils of the duties which had been carried out by them to the general advancement of milk production. Contrasting the proposals of the veterinary profession (half-yearly inspection of all dairy cows and the control of cowsheds and dairies placed in the hands of the veterinary profession) with the opinions of medical officers who favoured sampling and general pasteurisation, Mr. Vaux said the former would be very costly and would give no guarantee that tuberculosis-infected milk would not get on the market, while the suggestion of the medical officers would be the worst possible advertisement for milk. He did not see how it could be possibly carried out if the smaller towns and rural areas were to be supplied with milk at reasonable cost.

Mr. Vaux made a number of suggestions, among which were that milk sampling should be extended, that terms of compensation for reported tuberculous cows should be revised to encourage farmers to report cases earlier, that the owner of the farm should be made responsible, and not the tenant, for the structural condition of cowsheds, and that a fair bacteriological standard of cleanliness for raw milk should be laid down. This, he maintained, would eliminate the less efficient producer far more effectively than an army of inspectors.

Summing up, Mr. Bruford said he fully endorsed the opinion of the conference that the inspection of dairies and cowsheds should remain under the control of the district councils, but he did not think the district council was in a position to undertake veterinary inspection.

A resolution was unanimously passed declaring that the suggested transfer of district councils' functions in this matter was not approved.

The Veterinary Record

December 2nd, 1933.

POULTRY DISEASES AND THE VETERINARY PROFESSION

WITHIN recent times the poultry industry in this country has increased to an enormous extent. The incidence of disease has also greatly increased till, at the present time, it is no exaggeration to say that, unless measures for adequate control can be practised soon, there is every indication that the future of the industry will be in considerable danger. As with diseases of all animals, two aspects must receive attention: (*a*) the study of the disease with, as objects, the ascertaining of the nature, cause, prevention and treatment; (*b*) the practical application of preventive and remedial measures devised from the above study.

(*a*) Veterinary and other research workers have devoted and are still devoting time and energy to the investigation of the disease problems and progress is certainly being made. During the past year, much evidence of this progress has been shown: thus, at the annual conference at the Harper Adams Agricultural College four papers on disease were discussed, and at Rome, where the Fifth World's Poultry Congress was held, discussions of paramount importance on recent researches into disease questions were entered into by delegates from practically all countries. Further, at our own annual Congress one of the subjects for discussion was the paper presented by Mr. Dobson and which is reproduced in this issue of *The Veterinary Record.*

We are apt to become impatient at the rate at which such work is progressing and to conclude that we, as a profession, are not devoting to this important branch of animal disease the amount of time and study that it deserves. Research workers in this subject have a golden opportunity, for the field is wide, the diseases are many and varied, and the experimental animal is readily accessible and costs little. We feel that more and much more should be done in this field by veterinary research workers, for surely no one is—or shall we say should be—more fitted to undertake such research than those trained in the diseases of animals generally. There is, however, in the veterinary profession a distinct scarcity of research workers engaged in poultry work, and we wonder why. True, some research work is going on, but among research workers engaged on poultry problems generally it must be admitted that the veterinary profession supplies only a small number. Speaking generally, the fundamental training of these research workers must begin in the veterinary colleges and we feel that were more stress laid on the importance of the poultry industry and its disease problems, veterinary surgeons generally would be forced to appreciate the part they must play. Further, the encouragement given to a student specialising in research into diseases of animals hardly embraces poultry work. All this results in an inadequate supply of workers in the position to interest themselves in poultry disease problems. The matter is taken up by others who, we venture to suggest, without the initial essential training in general animal disease investigations, cannot be expected to view the position in the same light as we should do. There is great and immediate need for more and more research work into poultry diseases. This cannot be obtained without the very necessary early training of the undergraduate and the graduate in poultry husbandry generally and poultry diseases in particular, and we would urge that the teaching schools give these subjects more consideration.

(*b*) Disease control among poultry to-day is largely in the hands of laymen and, though in some instances successful results are being produced, this method leaves much to be desired. It is held by some that the general practitioner can play a useful part in the control of poultry diseases. Certainly, as part of his general training he should be in the position to discuss intelligently the various diseases from which poultry suffer and, when the occasion arises, to give the necessary advice in their control. We feel, however, that much of the work included in the control of poultry diseases is beyond his scope. In the country there are some millions of poultry and the amount of disease is large. In the discussion at the Llandudno Conference reference was made to the necessity of a properly organised system of control in which the veterinary profession should play a large part. Such a scheme would, we feel sure, meet the case.

We feel strongly that the poultry disease problem will not be in a happy position till a properly organised veterinary system is in operation. The system must include the research worker as well as the man in the field, organising and advising on the control of the various outbreaks encountered.

Synchronising with the reports from many centres of the Australian Commonwealth that the horse is coming back, is the good news that there has been a marked recovery of the Indian remount trade. During September, 1,450 of this particular type were shipped to India, the largest consignment that has left Australia for some time.

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It is now officially estimated that over a million children regularly take milk at school.

Clinical Reports

JOHNE'S DISEASE AND MINERAL DEFICIENCY

ARNOLD SPICER, F.R.C.V.S.
Oxted, Surrey

For the last five years I have had under veterinary supervision a herd of cattle kept on a farm where Johne's disease was very prevalent. The herd consisted of about four or five Red Polls, 24 Guernseys and 20 to 30 Aberdeen Angus. During the last five years all the Red Polls have died from Johne's disease and about 16 Guernseys, whereas there has not been a single death amongst the Aberdeen Angus.

It is quite evident that this farm must be heavily infected with Johne's disease, and yet only the milking breeds suffered from it—the cattle that were likely to suffer from mineral deficiency in the soil owing to the drain on the system caused by the withdrawal of minerals used in the formation of milk.

It took a good deal of persuasion to get the agent to use minerals, and then an inferior brand was obtained and the animals were only fed irregularly. A better brand has now been secured, and for the last six months there has not been a fresh case. This example is one step towards proving my contention that Johne's disease is not infectious.

It will not be out of place to quote another example of the advantage of feeding minerals where Johne's disease is prevalent. I recently called at a farm, where I knew Johne's disease was prevalent, to see a cow, and whilst there, asked the farmer if he had lately had many losses from that disease. His reply was that he had not lost any for two years, and on asking how he accounted for this he said he did not know, but hoped it would not break out again. I then asked him if he fed minerals, and he said he had started about two years ago, giving a complete mineral mixture at the rate of three pounds to every hundredweight, during the time the cattle were in the sheds, but not when they were turned out at nights during the summer.

This is a striking testimonial to the value of minerals in the prevention of this disease.

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INTRA-ABDOMINAL MANIPULATION IN A CASE OF INTUSSUSCEPTION OF THE BOWEL IN A COW

E. G. CONISBEE, M.R.C.V.S.
Kimbolton

The subject was a first-calf heifer about three-and-a-half years of age, in good condition and in milk. I was asked to see her on August 16th. Her temperature was about normal, her pulse sluggish and rather soft, the abdomen somewhat tympanitic and with a slight bulging in the lower right flank. Appetite for both food and water was in abeyance; the bowels were almost inactive; there was some subacute pain or discomfort and a tendency to seek the floor. She was given linseed oil and opiates. On the 17th she was somewhat duller and the tympany more pronounced. Intussusception was diagnosed.

Thinking of a recent abstract in *The Veterinary Record*, the author of which I do not recall at the moment, and considering it might be possible to reach and correct the invaginated portion of gut through a vaginal incision, the position was explained to the owner and arrangements made to attempt it in the afternoon. The incision was made immediately above the os uteri. In these circumstances it is not an easy incision to make; the abdominal tympany precludes dilatation of the vaginal passage, and incision of the peritoneum may be a further difficulty. After introducing the hand into the peritoneal cavity, search discovered what appeared to be an intussusception, but all efforts to reduce it seemed to be unavailing, and eventually they were given up and the cow left after antiseptic attention to the vagina.

On the next morning the animal appeared much as she had done on the previous day, and another attempt at reduction was made in the afternoon—this time with apparently more success as, after some considerable manipulation, a sliding movement in the affected portion of gut was appreciated. It would not completely reduce, however, and efforts were abandoned when a slight tear in the mesenteric covering was detected. The next morning, however, the cow had commenced to feed and the bowels had acted satisfactorily. After-treatment comprised the insertion of one or two pessaries and her recovery has been uneventful.

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CALCIUM (SANDOZ) IN HÆMORRHAGE

W. COLLINSON, M.R.C.V.S.
South Anston, Sheffield

Case I.—Cow. Epistaxis. *April 9th*, 1931. This animal had been bleeding from the nose for two days, when the owner called me in. There was no history of an accident, nor were there external signs of bruising. Hæmorrhage was becoming more severe.

Treatment.—I gave a hypodermic injection of adrenalin, 3 c.cs., morning, noon and night. A hosepipe was applied to the face at intervals. Liq. ferri. perchlor. was administered internally. Bleeding had stopped at night.

Next day hæmorrhage was worse than before. I gave ʒii calcium Sandoz in one quart water

subcutaneously, as in milk fever. Hæmorrhage stopped in two hours and there was no recurrence. This animal had lost a considerable amount of blood, her visible mucous membranes were blanched, and she was very weak.

. . . . .

Case II.—Springer spaniel, 18 months old. Hæmophilia.

This subject was apparently a very healthy, well-grown dog, in very good condition.

July, 1932.—Brought to surgery with a very small punctured wound on the tongue, which the owner said had been bleeding for two days.

Treatment.—Hypodermic injection of adrenalin. Atropine mixture for internal administration. Hæmorrhage stopped next day. Alum was applied as a styptic and I gave some to the owner for application.

September, 1932.—The dog was again brought to the surgery, there being slight hæmorrhage from the gum at the base of the left upper canine tooth, caused by retrieving a stone. The same treatment as for the tongue was applied, and the hæmorrhage stopped next day.

May, 1933.—Re-appearance at the surgery with a swelling (hæmatoma), 4-in. by 2½-in., on the upper third of ribs on the right side.

When I told the owner what the condition was, he asked me what would cause it, and when I suggested a knock on some hard object, he said he had often noticed smaller lumps on different parts of the body at various times, when the dog had knocked himself.

Treatment.—I applied a broad elastic bandage, and put him on calcium Sandoz, one small teaspoonful three times each day, mixed with food. The owner rang up in about a fortnight saying that he thought it was upsetting the dog, as he was refusing his food. I suggested giving half the dose and twice only each day. I saw the owner the other day and learned that there had been no recurrence of the trouble, nor had he noticed any swellings to appear if the dog knocked himself. The patient is still receiving about a quarter of a teaspoonful night and morning.

. . . . .

Bloody Milk (Cows). I have treated about 20 cases with ʒii calcium Sandoz in one quart water, injected subcutaneously. The trouble in each case has disappeared within 24 hours, and there has been no recurrence.

A demand that milk from cows at auction marts should be coloured so that it might not be sold for human consumption was made at a meeting of West Riding F.U. It was stated that thousands of gallons of such milk were coming on the market quite illegally; for cows offered at auction marts had usually calved only a day or two before, whereas that from cows calved less than four days was not recognised by the Milk Marketing Board as fit for domestic consumption.

Abstracts

[Bovine Contagious Abortion. Doyle, T. M. *Journal Ministry of Agric. 40.* 491-505.]

The purpose of this article is to put before cattle-breeders and dairy farmers a brief résumé of existing knowledge on bovine contagious abortion, to outline the measures that should be practised to control and eradicate it, and to call attention to the heavy financial handicap with which farmers unwittingly burden themselves by allowing this preventable disease to exist and spread unchecked in their herds.

The author believes that bovine contagious abortion is probably the disease of greatest economic importance to stock-breeders in this country and is annually the cause, directly and indirectly, of enormous financial loss. He stresses the fact that its incidence has been steadily increasing for many years, that a high percentage of cows is now infected and that its presence or absence frequently decides whether a herd will show an annual profit or loss.

Live abortion vaccine, as at present prepared, has been extensively tested, and while it may confer some benefit, it will not eradicate the disease.

Stock-breeders are faced with a decision, whether to resign themselves to continued heavy financial loss, or to undertake drastic action for its control. There is no easy middle course.

A concise summary of exacting knowledge is given under the following headings: Causal agent; age and susceptibility; symptoms; diagnosis by the blood agglutination test, which is regarded as a method of great accuracy; method of infection and period of incubation; sites of infection, *viz.*, pregnant uterus, udder, joints, the generative organs of bulls and the intestines and internal organs of calves; the part played by the bull; calves, their relative resistance; immunity, the fact that the majority of cows that have aborted do not develop complete immunity, but merely a tolerance to the infection, and that they become permanent carriers of *Brucella abortus*; and reduced milk yield.

The latter half of the paper is given to the control of the disease; it is a preventable disease, and its eradication could be successfully achieved on many farms without any immediate heavy financial outlay.

In this country a large proportion of the herds are sufficiently self-contained to allow of an eradication policy being practised. The measures to be adopted are few, simple and inexpensive, and are readily incorporated into the ordinary routine management of a herd.

The general management of the infected and

non-infected portions of the herd is considered in detail, including the precautions to be taken to avoid the spread of infection. Emphasis is given to the fact that calving time is the time of greatest danger—the period during which infection is generally disseminated—and to the necessity of calving boxes.

Under the heading of " replacements " it is noted that the addition of newly-purchased breeding-stock to a herd is the most dangerous channel for the introduction of the disease, that the safest animals to add to clean herds are non-reacting calves from non-reacting dams, and that pregnant animals should not be added to a clean herd until they have passed a negative blood test at least two weeks subsequent to calving.

The whole is a concise and valuable survey of our present knowledge in regard to bovine contagious abortion, and will amply repay reading in the original.

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[Contagious Abortion of Cattle and Bang Disease of Man. Graub, E. *Schweiz. Archiv. f. Tierhlk.* 1933. 75. 7.]

This is a valuable review, together with a commentary on the position of *Br. abortus* infection in Switzerland.

Dr. Gräub takes the view that human infection should not be regarded with alarm. Although an increasing number of diagnosed cases are occurring at the present time, there is no justification for supposing that it is actually becoming more common, having regard to the extent of bovine infection. It is the exception and not the rule for persons having agglutinins in their blood to show clinical signs of illness.

With regard to infected milk, the excretion of *Br. abortus* is delayed after calving, Klimmer finding 20 per cent. of excretors 14 days *post-partum* and 50 per cent. excretors five months *post-partum.* Karsten found that 24 to 70 per cent. of aborting cows excrete *Br. abortus* in their milk later. In 17 herds, which had never been vaccinated, Zwick found 59 per cent. of excretors and in some in which no abortions had occurred for two years, there were 24 per cent. of excretors. According to Klimmer, *Br. abortus* can be excreted in milk for as long a period as seven years, but the number of bacteria excreted is very small, and infinitesimal compared with the number excreted from the uterus after abortion.

Various workers have found, in testing market milk, a high proportion of samples infected—Zeller 5-50 per cent., Lerche 50 per cent., and Meyn and Weiske 35 per cent. (the latter in special grade milk).

Br. abortus can survive for up to 91 days in ordinary milk, in yoghurt up to nine days, in kefir up to 19 days, in butter up to 35 days, and in soft cheese up to 35 days. It is quickly killed by souring, by exposure to 64° C. for 30 minutes and by ordinary pasteurisation. The isolation of *Br. abortus* from milk is difficult if a quick answer is required, but evidence of milk infection is fairly reliably obtained by blood and milk agglutination tests, a high blood titre alone being strongly suggestive of milk infection (Proescholdt). Milk agglutination tests always give certain results, however, irrespective of the blood test result.

Work of recent years has indicated that the risk of human infection is much greater from direct contact with aborting cows than from milk drinking. Most cases of human infection on the Continent have been in country dwellers, and the consensus of opinion is to the effect that the possibility of infection from milk is distinctly slight. The American veterinary opinion is the same. Gabathuler has observed no case of human infection from milk in Davos, although infected milk is common and the milk is drunk raw there.

Thomsen found no clinical case of undulant fever among 65 Danish veterinary practitioners, although all but four of them were blood-positive. Thirty-nine per cent. of farmers having infected herds reacted positively. For infection to cause illness in man a low resistance of the person and an unusually heavy or virulent infection of the milk are necessary.

In Switzerland, much attention has been paid to contagious abortion, and much progress has been made in the education of stock owners by means of the Federal Veterinary Office, the Abortion Commission of the Society of Swiss Veterinarians, the Breeding and Milk Producers' Societies. These all work in close connection and issue and distribute educational leaflets and give lectures on the subject.

It has been decided that the use of live vaccines is well justified for use in Switzerland for the reduction of losses in infected herds; it is the only known remedy for calf losses and has been clearly proved to be worth while. Live vaccines are only allowed on farms where the existence of the disease has been diagnosed bacteriologically or serologically.

The fear that the use of live vaccines increases the danger of human infection has not been demonstrated; on the contrary, it has been shown that this danger is less from (live) vaccinated animals than from naturally infected ones (Zwick and Buck, Creek and Carpenter). Infection from vaccination does not so often pass into the udder. Vaccinated cows abort to a less extent than naturally infected cows, so that the risk of contact infection is also less.

In Switzerland the greater part of the population is accustomed to drink milk that has been boiled. Raw cooled milk is, as a rule, used in catering businesses; pasteurisation is indicated for such. Finally, a minority of people prefer

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on various grounds to drink raw milk; for them milk from tuberculosis- and abortion-free herds is indicated. Special quality designations do not at present exist in Switzerland, and the author considers that it would be desirable to have some. J. E.

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[**"L'anæxotuberculine."** Goret et Zeitoun. (1933.) *Recueil de Méd. Vét. de l'Ecole d'Alfort. 109.* 9. 513-518.]

The authors discuss the product Finzi introduced in 1929 as a diagnostic reagent for tuberculosis, particularly of cattle, but also of dogs.

The method of preparation of anæxotuberculin is as follows: Human or bovine strains of tubercle bacilli are grown on 5 per cent. glycerinised peptone broth in medium-sized flasks for four to six weeks at 38° to 38·5°. The culture broth is then carefully collected by slow aspiration with a pipette introduced below the pellicle growth of bacilli, and should be clear and free from fragments of pellicle, which is left intact in the flask. This is then filtered, and 0·5 per cent. formalin added. The product is ready for use the next day.

The dose for cattle is 2·5 c.c. for the intramuscular test, and 0·25 for the intradermal test.

Finzi claims the following advantages for his product as compared with old tuberculin:—

Its preparation is very simple and practicable.

It clearly indicates any hypersensitiveness of an infected animal towards the toxic products of the tubercle bacillus, with smaller doses than required with old tuberculin, a quicker and more intense reaction, but free from severe systemic manifestations, being provoked.

Neither the extent of infection, nor the factor of individual sensitiveness, appreciably affects the degree of reaction.

Healthy animals never react, even with increased doses of anæxotuberculin. Animals never become accustomed to the reagent, and the reaction is quite distinctive.

The intradermal reaction is nearly always accompanied by a definite thermal one.

The reagent contains only excretory products of the tubercle bacillus, these being endowed with characteristic antigenic properties of very marked specificity.

In the case of the dog the product gives sure and easily read results. The product has been found stable in sealed ampoules for two years (under favourable storage conditions).

A subcutaneous test, made a few days before an intradermal one, did not diminish the reaction of the second test.

Finzi claims that his products, when made from either bovine or human strains of tubercle bacilli, or a "mixed" product (bovine *plus* human) or a "polyvalent" product, are all equally good for the cattle test.

The great specificity of the product is said to be due not only to a thermostable substance (present in old tuberculin) but also to a thermolabile element, which old tuberculin lacks.

The authors have used these preparations of Finzi on three herds of cattle, results of testing being described. They substantiate Finzi's claim of retesting at short intervals being a safe procedure.

They conclude, from their results, that the most serious cause of spread of tuberculosis among cows in Italy is the introduction of fresh animals into a diseased herd for intensive husbandry. This follows even when all the usual hygienic precautions are taken, and when those animals which are introduced into such herds have passed the tuberculin test, and even when they are mature animals in prime condition, and of a breed and from a district in which tuberculosis is known to be rare.

Actual reactions to be expected from the test inoculations are not described, except for a brief reference to the thermal reaction (up to 3·3°). A fairly extensive bibliography is appended.

C. V. W.

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[**Exotuberculin in the Diagnosis of Bovine Tuberculosis.** (Trans. title.) Valcarenglii, E. *Bull. de l'Acad. Vét. de France. 6.* 7. 255-262. (13 refs.)]

This exotuberculin is made from a 5 per cent. glycerine peptone broth culture of a bovine strain called "Vallée." This was incubated for 30 days at 38·5° C., filtered through paper and 0·5 per cent. of formol added. This preparation, made at a low temperature, appears to contain only exotuberculins, whereas Koch's "old tuberculin" prepared by maceration at 100°, is a mixture of exo- and endotuberculins. The normal temperature of the cow to be tested is ascertained by taking the temperature twice in the twelve hours before testing and 2 c.c. is injected intramuscularly at 4 p.m. The temperature is next taken ten hours later at 6 a.m. All the affected cows (50 were examined) gave strong reactions irrespective of their clinical state. The reactions were remarkable for their intensity, being from 2·1 to 2·6° C., and also for their duration.

The superiority of this tuberculin is based on the tuberculinigenic qualities of the strain "Vallée," and the earliness and marked character of the temperature reaction after intramuscular injection.

J. S.

Contracts, says the *Daily Telegraph*, have been signed for the establishment, at London Docks, of a de-freezing plant for the treatment, by a new process, of chilled meats from Canada. Two million turkeys and chickens from the Dominion, after treatment, will be put on the English market at Christmas.

Review

[The Onderstepoort Journal of Veterinary Science and Animal Industry. Vol. 1, No. 1, July, 1933. Edited by P. J. Du Toit.]

The Onderstepoort *Journal* is a new publication and takes the place of the well-known "Annual Reports of the Director of Veterinary Services and Animal Industry." In a foreword the editor explains the reason for the change and gives the information that the *Journal* will be published quarterly. We congratulate the editor on this venture, and predict with confidence that the change will be well received by the scientific world generally.

The volume is divided into six sections:—

I. Protozoal Diseases.
II. Virus Diseases.
III. Parasitology.
IV. Physiology.
V. Poisonous Plants.
VI. Chemical Blood studies.

Protozoal Diseases.—The two papers in this section deal with outbreaks of *Æ.gyptianellosis* in poultry and show that the *Ægyptianella pullorum* can actually cause mortality, especially among young chicks. The protozoan parasite is shown to be transmitted by the tick—*Argas persicus*. It is interesting to note that the adult tick can transmit after feeding on infected chickens and can retain its infectivity for at least 162 days.

Virus Diseases.—Three papers comprise this section—two deal with immunisation against horse sickness by the use of formolised virus and the third discusses rabies in South Africa during 1932. The papers on horse sickness are further reports on work already published and carry a stage further observations on the technique in preparing formolised virus and its use under experimental conditions. The indication from this work is that a field method will ultimately be evolved, though at the present time "the application of the method to the field cannot be recommended. . . ." To workers on virus disease immunisation these papers will be of special interest.

The paper on rabies shows that 14 outbreaks occurred during 1932 in which three human beings, one dog, two oxen, two domestic cats and ten species of wild carnivora were affected.

Parasitology.—Seven papers appear in this section. One paper deals with the administration of anthelmintics to horses in bran, and the authors show that claims for this method against strongyles and ascarids cannot be substantiated but that such a drug as carbon bisulphide is only effective when administered by stomach tube. The cause of nodular enteritis in cattle is dealt with in the next paper, and it is shown that this condition is caused by the *Œsophagostomum* larvæ, probably *O. radiatuum*. The condition in sheep and lambs is also described and shown to be due to the presence of the larvæ of *O. columbianum*. A paper of ten pages deals with the Chemotherapy of Œsophagostomiasis of sheep. It is pointed out that the problem cannot be solved satisfactorily until a method of dosing sheep into the abdomen is found, as most drugs are swallowed direct into the rumen and will not then act. The most promising drugs tried are those which are relatively insoluble and are thus most likely to reach the colon where they may be ingested by the parasites. Arsenious sulphide and sodium fluosilicate are the most promising, while copper and mercury compounds appear to be of some use. A short paper deals with the finding of a hitherto unrecorded cestode (*Joyeuscia fuhrunanni* Baer 1924) in the domesticated cat. Further papers give details of wild antelopes as carriers of nematode parasites of domestic ruminants; some South African reptilian Oxyurides, etc.

Physiology.—In this section appear two important papers. One deals with investigations into the physiology of deglutition in the sheep. The paper is the first of a series and the results do not warrant the drawing of definite conclusions except that it seems possible that soluble sodium salts stimulate the vagus ending in the pharynx and may thus cause reflex closure of the œsophageal groove, and that the semi-solid nature of the ruminal contents and the presence of gas in the rumen and reticulum may counteract such stimulation or reflex. Future work should prove interesting. The second paper deals with the duration and motility of spermatozoa in different divisions of the reproductive tract in the ewe, and records the results of some excellent work and observations. For example, it has been shown that the cervical canal appears to be the natural habitat of the spermatozoa awaiting the arrival of the ovum and that the cervix acts as a depôt from which there is a constant issue of actively motile sperms to the various parts of the reproductive tract.

Poisonous Plants.—In this section are seven papers, all of considerable interest and value. The first of the series deals with the development of tolerance in animals to certain poisonous plants. The authors give experimental proof that such a tolerance can be induced, and discuss the difference between tolerance and immunity. The toxicity of sodium chlorate is discussed in another paper in which it is shown that it is of low toxicity to stock. *Lathyrus sativus* (Indian pea) poisoning forms the subject of a short communication in which it is shown that when fed in the fresh state and in the pre-flowering and flowering stages it proved to be poisonous to horses but

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not to cattle or sheep. The following also form the subjects of papers in this section: Fungi in relation to health in man and animals, the general criticism being that "for all practical purposes fungus-infected foodstuffs must be considered poisonous until the contrary has been proved by extensive feeding experiments on the different classes of stock"; poisoning of human beings by weeds contained in cereals (bread poisoning), the most important being *Senecio* spp. poisoning, which is fully discussed. There are also short papers on *Lolinum temulentum* L. and known and unknown poisonous plants in South Africa.

The whole section is of extreme interest and represents an enormous amount of careful observation and experimentation.

Chemical Blood Studies.—Five papers appear in this section and deal respectively with (1) Laked and unlaked blood filtrate of animals in health and disease, with particular reference to method and technique. This is a general introduction and describes the methods adopted in the various examinations. (2) The determination of urea in animal filtrates (laked and unlaked). A modification of an older method of estimation is described. (3) Laked and unlaked blood filtrates of sheep in health and during "heartwater" and bluetongue. (4) Laked and unlaked blood filtrates of horses in health and during horse sickness. (5) Laked and unlaked blood filtrates of bovines in health and during anaplasmosis and piroplasmosis.

These papers record examinations of the blood in the various animals in health and disease and detail the results of many experiments which are also portrayed in the form of many tables and charts.

The *Journal* indicates the type of accurate work being carried on at the Onderstepoort Laboratories. It further shows the great variety of subjects being dealt with. Every paper must appeal to certain sections of research workers, who will do well to peruse the various sections. We feel sure that the hope expressed by the editor in his foreword will be realised, *viz.*, "that this new *Journal* will find a worthy place on the library shelves of all institutes interested in histological problems."

In his quarterly report the Chief Veterinary Inspector for Cumberland states that no evidence of sheep scab was found on the Pennine Hills, and no outbreak of the disease had been confirmed in this area since 1931. Previous to that date, scab was somewhat prevalent. A number of farmers in the area had expressed the opinion that there should be a double-dipping in August in order to maintain freedom from the disease.

R.A.V.C. OLD COMRADES' ASSOCIATION

ANNUAL RE-UNION DINNER AND GENERAL MEETING.

The thirteenth Annual Re-union Dinner of the Royal Army Veterinary Corps Old Comrades' Association was held at Anderton's Hotel, Fleet Street, E.C.4, on Friday, November 3rd, 1933, at 7.30 p.m., when amongst the Members present were:—

Major-General Sir John Moore, K.C.M.G., C.B., Colonel Commandant, R.A.V.C. (in the Chair); Major-General W. S. Anthony, C.B., C.M.G., Director-General, Army Veterinary Services; Major-General Sir Layton J. Blenkinsop, K.C.B., D.S.O.; Colonel J. J. Aitken, C.M.G., D.S.O., O.B.E.; Colonel H. E. Gibbs, D.S.O.; Colonel W. H. Walker, D.S.O., O.B.E.; Lieut.-Colonels E. P. Argyle, D.S.O., A. E. Clark, H. C. Dibben, O. S. Fisher, O.B.E., J. W. Rainey, C.B.E.; Majors E. G. Turner, D.S.O., W. St. J. P. Macartney, C. Davenport, O.B.E., S. L. Slocock, M.C., W. B. Howe, R. H. Stalker, G. E. Oxspring, C. Holland, M.C., Glyn Lloyd, D.S.O., M. A. Murphy, W. E. Barry; Captains H. B. Collet, B. H. Benson, E. Epps, J. Daunt, O. Preston, G. S. Walker, and A. J. Warburton (Hon. Secretary and Treasurer), A. H. Webber; Lieuts. F. L. Cundell, J. Clabby, J. D. Daly, I. McLaren, J. A. Langley and M. M. Healy.

After the loyal toast the Chairman proposed "The Association," and this was most ably replied to by Major-General W. S. Anthony.

A fine programme of music was rendered by Mr. A. C. Ballinger's band during the dinner.

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The Annual General Meeting was held prior to the dinner with the Colonel Commandant, Major-General Sir John Moore, K.C.M.G., C.B., in the Chair.

The minutes of the last meeting were read and confirmed, also minutes of Sub-committee and Committee of Management Meetings. A Statement of Accounts was presented by the Hon. Secretary and Treasurer (Captain Warburton), copies of which had been circulated to all members. The Statement showed the Association to be in a good position financially and, on the proposition of Major-General W. S. Anthony, seconded by Colonel H. E. Gibbs, the accounts were passed.

The following recommendations of the Committee of Management were put to the meeting, and adopted:

1.—That Subscriptions for Life Membership be reduced from £2 10s. to £2 for Officers and £1 for other ranks.

2.—That the cost of the Annual Dinner be reduced to 4s. per Member and 5s. per non-member.

3.—That the Colonel Commandant of the Corps, on vacating his appointment as such, becomes a Life Vice-president of the Association.

The proposition to hold a meeting of the Association at the Depôt on Cup Final night was not recommended by the Committee of Management, owing to lack of accommodation, and the meeting concurred.

It was announced that further War Loan to the amount of £100 had been purchased, which brought the amount invested to £600.

The election of the Committee of Management was next proceeded with, when Major E. G. Turner, D.S.O., the O.C., No. 2 Section, Aldershot, was elected in the place of Major G. A. Kelly, who had proceeded overseas; and the O.C., No. 1 Depôt Section, Major C. Davenport, O.B.E., was elected in place of Major R. H. Stalker, resigned.

Colonel W. H. Walker, D.S.O., O.B.E., D.D.V.S., Aldershot Command,, was also elected to the Committee of Management.

Following the transaction of further business, Colonel H. E. Gibbs proposed a hearty vote of thanks to Sir John Moore for presiding at the meeting. This was seconded by Major-General W. S. Anthony, and carried unanimously.

Sir John thanked those present and said he was always ready to do anything he could for the Association.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

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DIARY OF EVENTS

Dec. 2nd.—Meeting of the North of England Division, N.V.M.A., at Newcastle-on-Tyne.

Dec. 4th.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, at 4.30 p.m.

Dec. 7th.—Meeting of the Central Division, N.V.M.A., at the Conway Hall, Red Lion Square, W.C.1.

Dec. 8th.—R.C.V.S. Written Examinations.

Dec. 11th.—R.C.V.S. Oral Examinations commence.

Dec. 13th.—All Changes of Address to be notified to Registrar, R.C.V.S.

Dec. 15th.—Meeting of the Southern Counties Division, N.V.M.A., at Salisbury.

Jan. 3rd, 1934.—R.C.V.S. Committee Meetings.

Jan. 4th.—Ditto.

Jan. 4th.—Victoria Veterinary Benevolent Fund Council Meeting.

Jan. 5th.—R.C.V.S. Council and Committee Meetings.

July 30th-Aug. 3rd, 1934.—National Veterinary Medical Association Congress, Edinburgh.

Aug. 13th-18th, 1934.—Twelfth International Veterinary Congress, New York.

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ARMY VETERINARY SERVICE

New Director-General's Career

In our issue of July 22nd we announced that Colonel J. J. B. Tapley, D.S.O., had been appointed Director-General, Army Veterinary Services, in succession to Major-General W. S. Anthony, C.B., C.M.G. The latter retired yesterday.

Following service as Civil Veterinary Surgeon in South Africa, the new Director-General was gazetted Veterinary Lieutenant in 1903, Captain 1908, Major 1915, Brevet Lieutenant-Colonel 1917, Substantive Lieutenant-Colonel 1928 and Colonel, October 25th, 1929, with seniority from January 1st, 1921.

He has served in South Africa, Egypt, Sudan, France and India, and his awards include five mentions in despatches; D.S.O.; Brevet Lieut.-Colonel; Third Class Order of the Nile; South African War, Queen's Medal and four clasps; Sudan Medal and clasp (Darfur); Great War: 1914 Star and clasp, British War Medal, and the Victory Medal. Colonel Tapley received a letter of thanks from the Governor, British East Africa, for work with camels.

He has held the following administrative appointments: Principal Veterinary Officer, Egyptian Army; Director of Veterinary Department, Sudan Government; D.A.D.V.S., Baluchistan District; A.D.V.S., Western Command, India; A.D.V.S., British Troops in Egypt; A.D.V.S., Eastern Command, and D.D.V.S., Aldershot Command.

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OBITUARY

Professor Joseph Lignieres

It was announced at the meeting of l'Académie de Médecine, Paris, on October 24th, 1933, that M. Lignières had died at Buenos-Aires. An obituary notice appeared in the *Bulletin de l'Académie de Médecine*, Vol. CX, No. 34, under the name of M. Brocq-Rousseu, and the following particulars have been gleaned from this appreciation:—

Joseph Léon Marcel Lignières was born at Saint Mihiel on July 26th, 1868. He received his veterinary education at the Ecole d'Alfort, 1886-1890, and was during this latter year chosen to assist Nocard who then held the chair of Infectious Diseases. In 1898 he proceeded to the Argentine to study the diseases of cattle, chiefly Texas fever. He organised a bacteriological laboratory at Buenos-Aires, and in 1899 was appointed to the directorship of the National Institute for Bacteriology at Buenos-Aires, and since then has represented the Argentine Republic at many scientific congresses.

His work in the Argentine included studies on such diseases as Texas fever, equine trypanosomiasis (*mal de caderas*), actinomycosis, actinobacillosis, strongylosis of sheep, foot-and-mouth disease and others.

Lignières was a member of many scientific societies; he held the Cross of Commander of the Legion of Honour, and was an Honorary Associate of the Royal College of Veterinary Surgeons.

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R.C.V.S. Obituary

Hamilton, William, Captain, late R.A.V.C., Vanderbilt Court, 5, Victoria Avenue, Harrogate,

Yorks. Graduated Edinburgh, May 26th, 1893; died November 15th, 1933, aged 62 years.

The Harrogate Advertiser states that Captain Hamilton, who had been in failing health for some time, passed away at Brooklands, Forest Moor, Knaresborough. He was closely associated with most of the local agricultural shows, and during the war, in 1917, at St. Omer, he acted in the capacity of personal veterinary surgeon to the horses of the Prince of Wales.

Captain Hamilton was a native of Shotts, in Lanarkshire, and son of Mr. Hugh Hamilton, an engineer. After qualifying, he went to Selby, and then took the practice of Mr. Thomas Parkinson, in Beechwood Crescent, Harrogate, in 1896. He has since practised in Cold Bath Road, Otley Road, and during the last four years in Victoria Avenue, Harrogate. He was hon. veterinary surgeon to the Pateley Bridge Agricultural Society, the Ripley Agricultural Society, the Washburn Valley Agricultural Society, and was associated with the Royal Show, the Yorkshire Show, and the Harrogate Agricultural Society. He was also a member of the Harrogate St. Andrew's Society.

He served throughout the war with the 4th Howitzer Brigade, the King Edward's Horse Regiment, and the Veterinary Corps of the Royal Field Artillery.

Captain Hamilton was married at Wesley Methodist Chapel in 1903, to Mrs. H. Simpson.

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PERSONAL

We are pleased to be able to record that Mr. Frederick Tonar, M.R.C.V.S., of Lansdowne Road, Bath, who is at the Forbes Fraser Hospital, Bath, is making good progress towards restored health.

"Are there to-day living in Sheffield and district any descendants or relatives of Mr. William Frederick Blanshard, veterinary surgeon, who resided in the city in the '60's and '70's? enquires a *Sheffield Independent* note writer.

"I ask this question because of one or two interesting documents which were shown to me by Alderman A. J. Blanchard. They were sent to him by a lady in Lemington-on-Tyne, who thought that there might be a connection with the Sheffield alderman's family.

"One document is dated April 12th, 1871, and is from the Edinburgh Medical Society conferring upon 'Mr. William F. Blanshard, of Sheffield, Yorkshire,' their diploma of honorary fellowship. The other is that appointing Mr. Blanshard as an officer in the veterinary department of the Army dated from 'our Court at Saint James's the third day of February, 1872, in the Thirty-Fifth year of our Reign,' and there appears in the left-hand corner of this notice the picturesque and bold personal signature of Queen Victoria."

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LADIES' VETERINARY BENEVOLENT GUILD

North of Scotland Division

On November 18th, Mrs. Howie, the Local Secretary, entertained the members of the Guild to tea at her home, and was successful in raising the sum of £1 17s. for the funds of the Guild. During the afternoon there were games and competitions, and post-cards were sold of snap-shots taken at the summer outing of the Division.

Although the number of members in the area is not large, they make up for this by their enthusiasm, and the meetings of the Guild are looked forward to with interest.

J. McG.

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LICENSING OF STALLIONS

The Ministry of Agriculture announces that the number of stallions licensed in England and Wales under the Horse Breeding Act, 1918, showed a further increase in 1933, 1,516 licences being issued against 1,477 in 1932 and 1,432 in 1931.

Heavy stallions were again wholly responsible for the increase in the total number of licences issued, but the decrease in the number of light stallions and ponies was smaller than in 1932. The increase in heavy stallions from 1,211 to 1,275 was shared by each of the three most numerous breeds, Shires increasing from 853 to 888, Clydesdales from 130 to 138 and Suffolks from 136 to 154, while Percherons were unchanged on the year at 57. Although light stallions and ponies decreased from 266 to 241, the number of pony stallions licensed advanced from 51 in 1932 to 61 in 1933. Thoroughbreds decreased from 166 to 134.

Licences were refused in respect of 40 stallions, a decrease of five as compared with 1932. Ten appeals against refusals were lodged as against seven in the previous year, and in six cases the appeals were successful. The breeds of the stallions rejected and the reasons for their rejection are given in the following table:—

Number of Applications for Licences not Granted and Grounds of Refusal, 1933.

Breed.	Number refused.	Percentage refused.	Disease.								
			Whistling.	Roaring.	String-halt.	Shivering.	Sidebone.	Cataract.	Ringbone.	Bone-Spavin.	Inadequately Prolific.
Pedigree											
Shire ...	25	3·1	9	5	1•	2	4	2	1	—	1
Percheron ...	3	5·1	1	2	—	—	—	—	—	—	—
Clydesdale ...	1	0·8	—	—	—	—	—	—	—	—	1
Suffolk ...	2	1·3	—	1†	—	—	—	—	1	—	—
Thoroughbred	2	1·5	2	—	—	—	—	—	—	—	—
Non-Pedigree											
Heavy ...	7	4·1	2	2‡	—	—	1	1†	—	1	—
Totals ...	40	2·6	14	10	1	2	5	3	2	1	2

•Also affected with sidebone. †Also affected with ringbone. ‡Also affected with shivering.

Seventeen infringements of the Act were reported to the Ministry during the season, as against 19 in the preceding year.

Licensing of Stallions in Scotland

The returns of the Department of Agriculture for Scotland yield indications of the renewed advance in horse breeding, for the number of stallions licensed to travel in Scotland this year—457—was the highest in any year since 1927; and the number of Clydesdale stallions licensed—382—is the highest since 1926. The 457 stallions licensed this year were: Clydesdale, 382; Highland pony, 27; Shetland pony, 17; Thoroughbred, six; Shire, three; Percheron, three; Hackney, two; non-pedigree, 18—total, 457. Applications for licences were made in respect of 468 stallions, and eleven were rejected, namely, Clydesdale, seven; Highland pony, one; Percheron, one; and non-pedigree, two.

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MEDICAL RESEARCH IN EAST AFRICA

The first of a series of annual conferences was opened in Entebbe on November 23rd, to devise means for co-ordinating research work on the tsetse fly, trypanosomiasis (sleeping sickness), and general medical research in East Africa.

"The Conference," says *The Times* Correspondent, writing from Kampala, "was under the chairmanship of Dr. Kauntze, director of the medical service in Uganda, and was attended by the directors of the medical services of Kenya and Tanganyika and the directors of the veterinary services of Uganda and Tanganyika, the director of tsetse research in Tanganyika, a medical officer from Nyasaland, and Dr. Fontana, from the Belgian Congo.

"The Governor, in opening the proceedings, said that the summoning of these Conferences had been decided on at the Governors' Conference, and their primary object was not to exchange information but to consider methods by which the knowledge of individual officials could be placed at the disposal of officials holding corresponding positions in other territories. The Governor extended a special welcome to Dr. Fontana."

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TROPICAL MEDICINE

A resolution confirming the amalgamation of the Ross Institute with the London School of Hygiene and Tropical Medicine was passed unanimously at a meeting of the members of the Ross Institute on Monday. The resolution also confirmed the arrangement with the Seamen's Hospital Society, under which the hospital at the Ross Institute will be closed down and the patients received into the Tropical Hospital of the Seamen's Hospital Society.

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"AN OLD WARRIOR"

In the current issue of *The Journal of the Royal Army Veterinary Corps*, Major C. A. Murray, R.A.V.C., details, under the above heading, and with a photograph, the history of an animal "with a wonderful record of war service to his credit who has just 'faded away' in the lines of the 10th Field Company, Madras Sappers and Miners, Bangalore.

"Joining the Q.V.O. Madras Sappers and Miners in 1891, he served continuously with that Corps until 1922, when he was bought out and pensioned off by the Corps he had served for 31 years.

"He was present in the following campaigns: Chitral, 1895; Malakand, 1897; Tibet, 1903; Abor, 1911; Egypt, 1914-1917; Palestine, 1917-1918. From 1914 to 1918 he served with No. 10 Field Company, Madras Sappers and Miners.

"Assuming his age to have been four or five years on 'joining up,' he must have attained the age of at least 46 years.

"His incisor teeth have been sent to the Royal Army Veterinary School Museum for preservation."

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

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DISEASES AND ACCIDENTS REFERABLE TO THE HUNTING FIELD AND TO THE TURF

To the Editor of The Veterinary Record.

Sir,—Although, after reading Major Comerford's paper at the recent Congress, one is forced to share the views expressed by Captain Brayley Reynolds, in that the dog has been very extensively dealt with, whereas it is clearly the horse and that animal only, which was intended by the Provisional Committee as the subject of the paper, it cannot be denied that this contribution to the proceedings of Congress provides much food for thought and discussion. It is surprising, however, how much has been included which should not have been, and how much has been left out, notably the acute congestion of the lungs often seen in the hunter after a hard run with hounds.

In dealing with the diseases raised by Major Comerford in the sequence of his paper, I should like to make the following comments. In inoculating against distemper, he has found by practical experience (which, after all, is the only type that counts) that by inoculating the virus first and then the serum, he gets better results than by using them in the reverse manner. If a period of days or even hours was allowed to elapse between the two injections, it could be understood that antibodies were manufactured, but I agree with Captain Reynolds that when both are injected at intervals of a few minutes, "Mr. Virus," if he can cover the ground in such a short time, has the Newmarket horses beaten "to a frazzle," and I think that the elaboration of antibodies in such a rapid time is out of the question. It must be further remembered that subcutaneous injection is the slowest method of absorption. The matter would appear to rest on the degree of infection to which the dogs were subsequently exposed, and it should not be difficult for Major Dalling and his colleagues to carry out experiments on virus-serum and serum-virus dogs in this direction. The value of therapeutic distemper serum depends on the duration of the disease when first seen. When cases are seen early, its effect in most cases is excellent and rapid, but in well-established cases its use is lowered in proportion, and I have found that a calcium-protein compound sold under the name of "Davenil," and administered subcutaneously, is far more effective; whereas in the pneumonic form, S.U.P. 36 often does yeoman service. I should have liked to have seen some new and effective remedy advised for the after effects of distemper, such as chorea. Remedies are innumerable, but their effects are valueless in established cases.

In leptospiral jaundice, the effect of serum appears to vary. If the case is seen early, it will often abort an attack, but I agree with Major Comerford on the value of saline injections,

XUM

which should be frequently repeated (twice daily in severe cases). I have never used prophylactic vaccine. It has to be remembered that whereas a whole litter may be affected, the general rule is for only one or two to be affected. I dislike the use of the term "septicæmia" in connection with wound infection of the toes and pads. Surely "necrosis" would be a better term. Septicæmia does not "stop" sufficiently long, as a rule, to admit of any treatment.

In cases of rachitis and epiphysitis, good results have followed the administration of Radiostol (in pellet form, the anti-rachitic value of each pellet being equivalent to 6,000 units). I have never used liquid medicated paraffin for worms, save as a preparatory to the capsule, at the start of the fast, but I agree that it is perfectly safe, though I should doubt its efficacy *per se* as a vermifuge. Has Major Comerford noticed the number of cases of Stuttgart disease, where the dog has for years been known to be a scavenger?

Does true contagious abortion exist in the bitch? I know it has been so asserted, and recollect one instance, when a client, some few years ago, was informed by the Veterinary Editor of a dog paper that it was as common in bitches as in cattle! In bitches liable to abort, injections of corpus luteum have proved beneficial in the early stages of pregnancy, as was found by Novak in the case of the human female. Concluding his paper on the section devoted to the dog, I am interested to see, after the ridicule which greeted my suggestion in this connection some few years ago, that Major Comerford ascribes feeding as a cause of hysteria. Has he noticed that luminal when given for any length of time, often effects the hind quarters of the dog? A preparation stated to be free from some of the defects of luminal, has had this effect even more markedly.

Coming to the horse and strongylosis. I cannot agree that "treatment is of value only for the expulsion of mature worms found in the intestines," although I am prepared to admit that this is only too often the case. The intravenous injection of the Bayer preparation of arsenic sold under the name of "Aricyl" has given good results, combined with medicinal treatment. Has Major Comerford tried copper sulphate in such cases, and can he give a good prescription for ascaridæ in the yearling?

I agree with Captain Reynolds' remarks about epistaxis. In the case of the human subject, when the source of the bleeding is, in the large majority of cases, a small spot called Little's or Kisselbach's area, situated on the front and lower part of the septum just beyond the vestibule, adrenalin, when applied either on a pledget of wool or as a spray is of value; but its use in the horse is often disappointing. Intravenous injection of hæmoplastin is attended by the best results, but, as Captain Reynolds points out, we want a permanent cure, as such cases in blood-stock and hunters are apt to occur with annoying frequency. It would be interesting to know if calcium lactate, given as a course, or injections of colloidal calcium, would have a beneficial effect. I tend to the opinion, however, that epistaxis of frequent occurrence must be regarded as a symptom of a disease or condition, which should be sought for, and if possible, corrected. Hæmoptysis can often be checked by the slow intravenous injection of 10 to 20 c.c. of a 1 per cent. solution of Congo red. When my fellow practitioners encounter their next case of azoturia, or the form of myositis referred to by Captain Reynolds and often erroneously termed azoturia, they should try the simultaneous injection (intramuscular and intravenous) of the Atarost preparation called "Lumbatrop," using 100 c.c. for each injection. In true azoturia the value of large, frequently repeated doses of soda bicarbonate should not be forgotten.

Yours faithfully,

J. F. D. Tutt, f.r.c.v.s.

1, St. Cross Road,
Winchester.

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CRIB-BITING AND WIND-SUCKING

To the Editor of The Veterinary Record.

Sir,—I would be pleased to learn from your readers how long the vice of crib-biting and wind-sucking takes to develop in a horse. I had a rather peculiar case referable to this some months ago, which was settled amicably, but which might have gone to court with doubtful ending for either side.

A dealer purchased a horse about 40 miles from here, and sent it on by train, and it was stabled in Waterford one night prior to shipment to England. The dealer next day noticed that it was a "wind-sucker," and consequently "stopped his cheque." However, the seller denied that it was a wind-sucker and sent me along to examine the animal. The fact was only too evident, and as a matter of interest I asked to see the animals in the stalls adjacent to the "sucker." To my surprise, these were also "wind-suckers," and I was informed that these had come down in the train with my client's horse. The question I had to answer then was "would my client's horse have learnt the vice from these others during the space of 20 hours from the time it was purchased until seen again by the dealer?" I leave the answer to those who may have more experience.

Yours faithfully,

George Hobson.

15, South Parade,
Waterford.
November 20th, 1933.

The Editor acknowledges, with thanks, the receipt of the following:—

Report of a meeting of the Mid-West and South Wales Division, N.V.M.A., from Mr. C. E. Perry, Hon. Secretary.

Communications from Mr. Ll. E. W. Bevan (Crowborough), Major T. Dalling (Beckenham), Captain W. W. Henderson (N. Nigeria), and Major-General Sir John Moore (London).

ADVERTISER'S ANNOUNCEMENT

Hewlett's Tannic Acid Outfit.

During recent years many of the old-fashioned treatments of injuries due to burning have been cast aside. Oily dressings have given place to cleaner and more efficient watery solutions. Tannic acid in a 2 per cent. solution has been found to be highly efficient and the spraying of wounds by this solution is now almost a routine measure.

Tannic acid solutions undergo changes if kept for any length of time, and it is only the freshly made solution which is 100 per cent. effective.

The introduction of compressed tablets of tannic acid and also of a small portable spraying outfit by Messrs. C. T. Hewlett, fulfils a long felt want, and we are sure that veterinary surgeons will find it advantageous to procure one of these outfits and keep it handy for emergencies.